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October 3, 2001

VIA HAND-DELIVERY

Mr. Gary E. Walsh, Executive Director
Public Service Commission of South Carolina
Koger Executive Center, Saluda Building
101 Executive Center Drive
Columbia, South Carolina 29210

Re: Application of South Carolina Electric & Gas Company for a Certificate of
Environmental Compatibility and Public Convenience and Necessity for Jasper
County Generating Facility

Dear Mr. Walsh:

Enclosed please find an original and twenty-five (25) copies of the Application of South Carolina Electric & Gas Company for a Certificate of Environmental Compatibility and Public Convenience and Necessity in the above-referenced matter.

Additionally, please find an original and twenty-five (25) copies of Direct Testimony and exhibits of Neville O. Lorick, Joseph M. Lynch, Stephen M. Cunningham, and John W. Preston, Jr. being filed on behalf of South Carolina Electric & Gas Company.

Very truly yours,


Francis P. Mood

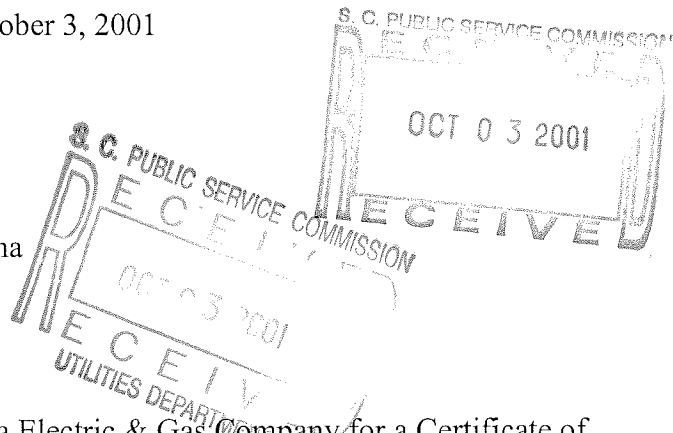
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Enclosures

cc: All parties of record

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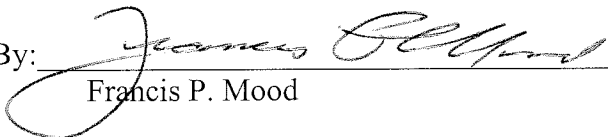
BEFORE THE SOUTH CAROLINA PUBLIC SERVICE COMMISSION
DOCKET NO. _____

IN RE: Application of South Carolina
Electric & Gas Company for a Certificate
of Environmental Compatibility and Public
Convenience and Necessity for Jasper
County Generating Facility

CERTIFICATE OF SERVICE

I, Francis P. Mood, the undersigned attorney with Haynsworth Sinkler Boyd, P.A.,
hereby certify that I have this 3rd day of October 2001, caused a copy of the enclosed
Application, Testimonies and Exhibits in the above-referenced docket to be served via hand
delivery on the parties of record, whose names appear below:

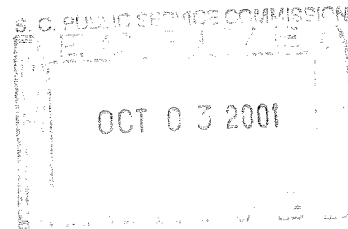
David Butler, Esquire
Public Service Commission of South Carolina
100 Executive Center Drive
Columbia, SC 29210

By: 
Francis P. Mood

SOUTH CAROLINA ELECTRIC & GAS COMPANY

BEFORE THE

SOUTH CAROLINA PUBLIC SERVICE COMMISSION



DOCKET NO. 2001 - - E

**APPLICATION FOR A CERTIFICATE OF
ENVIRONMENTAL COMPATIBILITY
AND PUBLIC CONVENIENCE AND NECESSITY
FOR JASPER COUNTY GENERATING FACILITY**

DIRECT TESTIMONY AND EXHIBITS

POSTED
10-3-01

ACCEPTED
Legal AB 10-3-01

BEFORE
THE PUBLIC SERVICE COMMISSION
OF
SOUTH CAROLINA
DOCKET NO. 2001-420E

S. C. PUBLIC SERVICE COMMISSION
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In Re: Application of South Carolina Electric & Gas Company for a Certificate of Environmental Compatibility and Public Convenience and Necessity for the Construction and Operation of an 875 MW Combined Cycle Generating Plant near Hardeeville, South Carolina)	APPLICATION FOR
)	CERTIFICATE OF
)	ENVIRONMENTAL
)	COMPATIBILITY AND
)	PUBLIC CONVENIENCE
)	AND NECESSITY

South Carolina Electric & Gas Company ("SCE&G" or "Company") hereby applies to the South Carolina Public Service Commission ("Commission") for a Certificate of Environmental Compatibility and Public Convenience and Necessity to construct and operate an 875 MW combined-cycle electrical generating plant on a site located in Jasper County near Hardeeville, South Carolina. This application is filed pursuant to the provisions of S.C. Code Ann. § 58-33-10 et seq. (1976 & Cum. Supp. 2000).

In support of this application, SCE&G would respectfully show to the Commission:

1. Applicant. SCE&G is a corporation duly organized and existing under the laws of the State of South Carolina, with its principal offices at 1426 Main Street, Columbia, South Carolina, 29201. The Company is engaged in the business of

S. C. PUBLIC SERVICE COMMISSION
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UTILITIES DEPARTMENT

generating, transmitting, delivering, and providing electricity to public and private energy users for compensation.

2. Service Area. SCE&G provides electric service to more than 622,366 customers in a 15,000 square-mile area in the central, southern, and southwestern portions of South Carolina. This area extends into 24 of the state's 46 counties. Columbia, Charleston, Aiken, Beaufort, and Orangeburg are major cities within the area.

3. Project Description. A description of the utility facility and the location at which it is to be built, power plant design features and facilities, and information pertaining to the project site are all contained in the testimony and exhibits prefiled herein. Specifically, please see the Direct Testimony of Neville O. Lorick and Stephen M. Cunningham, with exhibits.

4. Statement of Need. Currently, the Company has a net generating capacity from units on its system of 4,563 megawatts, consisting of 644 megawatts at V.C. Summer Nuclear Plant, 2,745 megawatts at 8 coal and steam generating plants, 804 megawatts at 6 hydro plants, and 370 megawatts of peaking combustion turbine capacity at various locations throughout its system. Including power available under long-term purchase agreements with other utilities and non-utility generators, the Company has a total generating capability of 4,588 megawatts available.

The Company's peak demands are forecasted to increase by 857 megawatts during the next ten years. The Company's needs forecast and considerations affecting this forecast are set forth more fully in the testimony and exhibits prefiled herein. Without additional capacity of the proposed plant, SCE&G will not be able to meet the

increasing need for power and assure system reliability. For more detailed analysis, please see the Direct Testimony of Joseph M. Lynch, with exhibits.

In order to provide the necessary generating capacity and to assure reliable electric service to its customers, the Company proposes to construct a combined-cycle generating plant in Jasper County, which will be composed of three General Electric 7FA combustion turbine-generators, three heat recovery steam generators (HRSGs), and one steam turbine-generator. The combustion turbines will be equipped with inlet chilling to maximize the output of the plant during hot weather, and the plant will have the capability to generate additional "peaking" output of up to 120 megawatts using supplementary firing. The peak output from the plant will be approximately 900 megawatts during the winter and 875 megawatts during the summer. See the prefiled Direct Testimony of Stephen M. Cunningham for greater detail.

5. Environmental Studies. An environmental study prepared by ENSR International is attached hereto as Exhibit A. Additional environmental information is contained in the Direct Testimony of John W. Preston, Jr., prefiled herewith.

6. Proof of Service. Exhibit B, attached hereto and made a part hereof, is proof of service of a copy of this application on the Chief Executive Officer of each municipality and the head of each state and local government agency charged with the duty of protecting the environment or of planning land use in the area in the county in which any portion of the facility is to be located pursuant to S.C. Code Ann. §58-33-120(2).

7. Public Notice. Attached as Exhibit C, and made a part hereof, is the form of public notice to be given to persons residing in the municipalities entitled to receive

notice pursuant to S.C. Code Ann. § 58-33-120(3) by publication of a summary of the application, the date on or about which it is to be filed, and the newspapers of general circulation in which such notice will be published. This notice will serve substantially to inform such persons of the filing of this application and proof of notice will be filed with the Commission when received from the various newspapers identified.

8. Correspondence or Communications. The name, title, address and telephone number of the persons to whom correspondence or communications relating to the application should be addressed are as follows:

Catherine D. Taylor
B. Craig Collins
Legal Department
South Carolina Electric & Gas Company
Columbia, SC 29218
(803) 217-9356

Francis P. Mood
Haynsworth Sinkler Boyd, P.A.
PO Box 11889
Columbia, SC 29211
(803) 779-3080

Attorneys for the Applicant

South Carolina Electric & Gas Company respectfully requests that the Commission issue a Certificate of Environmental Compatibility and Public Convenience and Necessity for the project described herein.

SOUTH CAROLINA ELECTRIC
& GAS COMPANY

BY: 

Francis P. Mood, Its Attorney

Date: October 2, 2001

**South Carolina Electric
& Gas
Columbia, South Carolina**



**Environmental Analysis for the
Jasper County Generating
Facility**

**ENSR Corporation
September 2001
Document Number 06147-018-310**

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1.0 PROJECT DESCRIPTION

South Carolina Electric & Gas Company (SCE&G) proposes to construct and operate a power generating facility, herein referred to as the "Jasper County Generating Facility," on a site located approximately five miles north of Hardeeville, in Jasper County, South Carolina. The proposed facility will be a combined cycle electrical generating plant with a nominal generating capacity of 875 megawatts (MW). The plant will be fueled primarily by pipeline-quality natural gas, with distillate fuel oil as a backup source.

This environmental assessment provides, in part, information required for SCE&G's Siting Application before the South Carolina Public Service Commission. The assessment is based on environmental study data provided by SCE&G and available published information. A list of the environmental studies conducted for the project is provided in section 1.2.

1.1 Site Location and Description

The proposed SCE&G Jasper County Generating Facility site is located approximately five miles north of Hardeeville in Jasper County, South Carolina. The site is bounded to the west by Savannah River swampland, to the east by State Secondary Road (SSR) 34 and to the north and south by timberland. Elevations of the site range from 10 to 31 feet above mean sea level (Milliken, 2001). The northern portion of the property contains an existing residence and associated outbuildings. There is also an existing powerline traversing the property in an east-west direction, south of the residence.

The area surrounding the proposed Jasper County Generating Facility site is primarily rural. The community of Baker Hill lies to the north with widely scattered residences and businesses located north and east of the site. The location of the proposed site is shown on portions of the Hardeeville and Rincon U.S. Geological Survey (USGS) 7.5-minute topographic maps in Figure 1 (located at the end of this document).

1.1.1 Site Access

Primary access to the Jasper County Generating Facility will be from SSR 34 (Old Purysburg Road). SSR 34 crosses Interstate Highway 95 (I-95) approximately 8 miles south of the proposed site. To the east of the site, U.S. Highway 321 runs parallel to SSR 34 and is readily accessible from the proposed facility location. The site is not directly accessible by rail, therefore, it is anticipated that major equipment deliveries will be trucked to the site via these existing roads. SCE&G does not anticipate the need for highway or bridge upgrades in order to ship the facility's major equipment.

1.1.2 Initial and Ultimate Development

The Jasper County Generating Facility will operate as a combined-cycle, base load power plant. The proposed facility is designed to have a nominal generating capacity in the range of 875 MW. Commercial operation is scheduled to commence in May 2004.

1.2 Summary of Environmental Studies

The following specific environmental studies were conducted to assess how the proposed SCE&G Jasper County Generating Facility will affect the local environment.

1. Cultural Resource Survey, Brockington and Associates, Inc., 2001.
2. Phase I Environmental Site Assessment, Milliken Forestry Company, Inc., 2001
3. Endangered Species Assessment, Milliken Forestry Company, Inc., 2001
4. Wetland Delineation, Milliken Forestry Company, 2001
5. Permit to Construct and Operate Air Emissions Equipment, ENSR International, 2001

2.0 AFFECTED ENVIRONMENT

2.1 Land Use

The project site is located within a rural area, and contains planted pine trees, mixed pines and hardwoods, pastureland, and swampland. Savannah River swampland is present in the western portion of the project tract, and South Carolina Route 34 (Purysburg Road) forms the eastern tract boundary. A drainage way separates the northern and southern portions of the site. Numerous dirt roads and firebreaks extend throughout the tract and an existing power line crosses the northern portion of the property. Elevations on the property range from ten (10) to thirty-one (31) feet above mean sea level.

Currently the tract contains a residential home and associated outbuildings in the northern portion of the property. These buildings were constructed in 1993. In addition to the residence, the tract has been used for horse boarding, hunting, timber management and farming. Primary focus of the farming operations appears to be grain production for wildlife use (Milliken Forestry Company, 2001).

2.2 Water Resources

The watershed that Jasper County is located within consists primarily of the Savannah River and its tributaries between Gall Branch and Cypress Branch. It occupies 99,732 acres of the Lower Coastal Plain region of South Carolina. This watershed contains a total of 84.3 stream miles. Long Branch enters the river at the top of the watershed. The Boggy Swamp drainage, which incorporates Mill Bay Creek, enters the river further downstream. As a reach of the Savannah River, this watershed accepts all upstream drainage.

The water supply that the proposed facility will utilize is located near the project site, owned by the Beaufort-Jasper Water Authority (BJWA). SCE&G will be purchasing water from this water authority for facility use. The peak flow rate will be approximately 8,150 gallons per minute. This total includes water for cooling and general facility use. Water used for cooling, will either be recycled, evaporated or discharged to an existing BJWA Publicly Owned Treatment Works (POTW) facility.

2.2.1 Existing Surface Water Quality

The project site drains into the Savannah River, which is located just west of the site. Aquatic life and recreational uses are fully supported in the river within this reach. However, the South Carolina Department of Health and Environmental Control (SCDHEC) has issued a fish consumption advisory for mercury, Cesium-137 and Strontium-90. This advisory includes portions of the project watershed. Conversely, SCE&G will be obtaining its water from the BJWA and not directly from an existing surface water.

2.2.2 Existing Groundwater Yields and Quantity

The project area is underlain by a surficial aquifer system which consists of unconsolidated sand and gravel aquifers (USGS, 1990). The thickness of the surficial aquifer system is typically less than 50 feet. Based on 1985 USGS data, between 5-10 million gallons of freshwater per day was withdrawn from the surficial aquifer in Jasper County. However, fresh ground-water withdrawals for most water use categories are increasing, according to a 1990 nationwide compilation of water-use data by the U.S. Geological Survey. BJWA plans to drill temporary water wells for use during construction. Use of well water during construction will not permanently affect ground water resources in the immediate vicinity of the site. However, water for operation of the Jasper County Facility will be obtained from BJWA. Therefore, groundwater resources will not be affected by operation of the proposed facility.

2.3 Terrestrial and Aquatic Resources

The proposed Jasper County Generating Facility site lies within the lower Coastal Plain Physiographic Province in the west-central portion of Jasper County. Biotic communities within the area range from freshwater cypress-tupelo swamp to longleaf pine on higher ridges. Elevations range from 10 to 31 feet above mean sea level (Milliken, 2001).

2.3.1 Upland Resources

Four upland community types are present within proposed project area. These include pine plantation, pine upland, upland island and agricultural (Milliken, 2001). All upland communities within the site have been previously managed for agricultural or timber production in the past, and therefore the natural vegetative characteristics have been modified. These types are described below.

- *Pine Plantation.* This type is characterized by planted loblolly pine (*Pinus taeda*). Other non-planted vegetation includes waxmyrtle (*Myrica cerifera*), greenbrier (*Smilax sp.*) and gallberry (*Ilex coriacea*). Very little herbaceous vegetation is present but primarily consists of Virginia chain fern (*Woodwardia virginica*) and broomsedge (*Andropogon gerardii*). This type occupies approximately 15 percent of the project area.
- *Pine Upland.* This type occurs on ridges and upland flats. Dominant vegetation consists of loblolly pine and longleaf pine (*P. palustris*) occasionally mixed with southern red oak (*Quercus falcata*), white oak (*Q. alba*), water oak (*Q. nigra*), black gum (*Nyssa sylvatica*) and mockernut hickory (*Carya tomentosa*). Common mid and understory species include flowering dogwood (*Cornus florida*), American holly (*Ilex opaca*), persimmon (*Diospyros virginiana*), sassafras (*Sassafras albidum*), pepperbush (*Clethra alnifolia*), various *Vaccinium* species and various ferns. Approximately 30 percent of the property is covered by this type (Milliken, 2001).
- *Upland Islands.* This type occurs within higher portions of Savannah River swamplands. Dominant species include loblolly pine, sweetgum (*Liquidambar styraciflua*), laurel oak (*Q. laurifolia*) and river

birch (*Betula nigra*). Midstory and understory species consist primarily of species found in the Pine Upland type. This type covers approximately 10 percent of the project site.

- *Agricultural Fields*. Planted grain crops and wildlife food plots planted in *Lespedeza bicolor* characterize this type. This type occupies approximately 10 percent of the site.

2.3.2 Wetland Resources

Wetlands are considered waters of the United States and fall under jurisdiction of the U.S. Army Corps of Engineers (USACE). Dredge and fill activities in waters of the United States are permitted by the USACE pursuant to Section 404 of the Clean Water Act (CWA). In order to avoid wetland impacts by construction of the new facility, a wetland delineation has been conducted.

Milliken Forestry Company delineated wetlands within the proposed Jasper County Generating Facility site. Wetland delineation followed the 1987 USACE Wetland Delineation Manual. Based on this delineation two wetland systems were identified. Both wetland systems are forested, palustrine systems (Milliken, 2001). These types include Bald Cypress – Tupelo Swamp and Small Stream Forest. Both systems are described below.

- *Bald Cypress – Tupelo Swamp*: This type occurs on floodplains adjacent to the Savannah River. Dominant vegetation includes bald cypress (*Taxodium distichum*), water tupelo (*Nyssa aquatica*), swamp tupelo (*N. biflora*) and green ash (*Fraxinus pennsylvanica*). The understory is sparse but includes buttonbush (*Cephalanthus occidentalis*) and lizard's tail (*Saururus cernuus*). This type occurs over approximately 30 percent of the tract.
- *Small Stream Forest*: This type occurs along tributaries of the Savannah River. Less than five percent of the project site contains this wetland type. Dominant species include willow oak (*Q. phellos*) and red maple (*Acer rubrum*). Bald cypress and swamp tupelo are also present. Understory species include possum haw viburnum (*Virburnum nudum*), fetterbush (*Lyonia lucida*), lizard's tail and various ferns.

2.3.3 Fisheries

The closest surface water to the site is the Savannah River. Warmwater species such as largemouth bass (*Micropterus salmoides*), various sunfish and catfish are typically found in this reach. No surface waters occur within the proposed project site. Therefore no additional discussion on fisheries is presented.

2.3.4 Threatened and Endangered Species

Milliken Forestry Company conducted an Endangered Species Assessment for the proposed project site in June 2001. Information regarding rare and endangered species known to occur in Jasper

County was obtained from the South Carolina Heritage Trust and from the U.S. Fish and Wildlife Service (USFWS). Habitat descriptions of listed species were developed and walkover surveys of the project area were conducted to determine the presence of suitable habitat. In addition, a line-of-site red-cockaded woodpecker (*Picoides borealis*) inventory was conducted on those portions of the tract containing potential habitat (Milliken 2001).

According to information obtained from the SC Heritage Trust and USFWS, no known state or federally listed species occur on the property or within one-half mile of the tract. The red-cockaded woodpecker (RCW) and flatwoods salamander (*Ambystoma cingulatum*) are known to occur in the general vicinity of the project site. The RCW is both federally and state listed as endangered. The flatwoods salamander is state listed as endangered and federally listed as threatened.

Based on the field surveys, no state or federally listed threatened or endangered species were observed within the project area. Suitable habitat for the flatwoods salamander was not noted within the proposed project site. However, marginally suitable nesting habitat and foraging habitat for RCW does occur within the project area (Milliken, 2001).

2.4 Cultural Resources

Brockington and Associates, Inc conducted an intensive cultural resource survey of an approximately 99-acre portion of the project site. The remaining portion of the tract, within the Savannah River swamplands, was not included in the cultural resource survey since this portion of the tract will not be developed. Based on the results of the survey, one previously unrecorded site and one isolated find were identified. The newly recorded site contained artifacts associated with Middle/Late Woodland and Mississippian occupations and included eighteenth/nineteenth century ceramics (Brockington and Associates, 2001). However, the site is not recommended as being eligible for the National Register of Historic Places (NRHP).

The isolated find was the remains of the Wethersbee School, a two room building built prior to 1937. The school and two associated outhouses were demolished and their material moved prior to 1993. According to the cultural resource report, this isolate cannot provide additional information and was recommended not eligible for the NRHP (Brockington and Associates, 2001). Additionally, one previously recorded site was located within the survey area. However, archaeologists did not relocate this site during the investigation. The site may have been misplotted or was destroyed by construction and maintenance of the existing transmission line (Brockington and Associates, 2001). Based on these results, the archaeologists conclude that no further action is required with regard to cultural resources.

2.5 Geology, Soils, and Seismology

2.5.1 Geology

The proposed site is located in South Carolina within the lower Coastal Plain. The geology of this area records many advances and retreats of the sea during which sediment was deposited and planed off repeatedly. For millions of years, the area appears to have been part of a nearly level plain. The sea inundated much of this plain many times during the Miocene Epoch, a period of about 18,000,000 years. During the Pliocene Epoch, a period of approximately 13,000,000 years, part of the plain was above water, and much of the once continuous cover of Miocene deposits were eroded. Widespread movements of the earth that ended the Pliocene Epoch resulted in drowning the coastal region as far inland as the present day Coastal Plain. At the time, the sea was approximately 270 feet higher than its present level. Since that time, the sea has fluctuated many feet several times. The thawing and forming of ice during the Pleistocene, or Ice Age caused the fluctuation, which lasted less than 1,000,000 years. Seven abandoned shorelines have been detected, and the area between each shoreline is treated as a separate terrace with each given a distinctive name. The terraces nearest to the sea are of a younger age, are less developed, and possess a higher percentage of weatherable minerals.

2.5.2 Soils

The project area is characterized by deep, moderately well drained, somewhat poorly drained, and poorly drained soils with sandy loam surface textures and clayey subsoil. Three soil series are delineated on the soil map of the proposed site. They are the Eulonia association, the Argent-Okeetee association, and the Santee association (USDA 1980). The soils tend to have moderate natural fertility and a moderate organic content. The Eulonia association is low in organic content, more conducive to urban uses, and is conveniently mapped in the eastern part of the site, adjacent to Purysburg Road. Most of the proposed energy facility is located within the Eulonia and Argent-Okeetee associations. The Argent-Okeetee association is mostly confined to the southeast portion of the proposed site, and the Santee association makes up the western portion. All three soil series are found on level to nearly level (0-2% slopes) lands of the lower coastal plain and formed from sediment deposition over many geologic periods. Because of this, they possess no depth to bedrock problems and only a slight erosion hazard. The erosion hazard is the probability that erosion damage may occur as a result of site preparation and other ground disturbing activities. The depth to groundwater for the Eulonia association is 1.5-3.5 feet from December through March, 0-1 foot for the Argent-Okeetee association, and +1-1 for the Santee association. Therefore, there is a potential for flooding on the Argent-Okeetee and Santee associations. The Santee and Argent series are also nationally and state listed hydric soils. Generally, these two soils are best suited for pasture, row crops (if drained), and loblolly pine.

2.5.3 Seismology

Historical seismicity in the Coastal Plain of South Carolina has occurred primarily in the Charleston area. One of the great earthquakes in U.S. history happened in Charleston on August 31, 1886. The epicentral intensity of this event was MMI_o X (Modified Mercalli scale). An intensity of MMI_o X implies that rails were bent, some well-built wooden structures were destroyed, and most masonry structures were destroyed. Damage was also observed in cities within a 160-kilometer radius, including Columbia and Savannah, GA. The network monitoring of the Coastal Plain region has shown that seismicity occurs at shallow depths in the upper crust, from the near surface to about 15 kilometers. This region is characterized by shallow earthquakes as opposed to deeper, stronger shocks experienced in other regions. However in recent years, the Coastal Plain area has been much less active.

2.6 Climate

The climate of Jasper County is subtropical in nature, characterized by long hot summers followed by short mild winters. Jasper County lies in southern South Carolina and has the mildest climate in the state. Annual average maximum temperature is 76.5 degrees Fahrenheit (°F); annual average minimum is 56.0 °F; the annual mean temperature is 66.3 °F. Precipitation is usually abundant and equally distributed throughout the year. The abundant supply of moist, warm, unstable air produces frequent scattered showers and thunderstorms. Average annual rainfall is approximately 49.22 inches per year. The tropical storm season runs from June through October. Hurricanes are rare for the area, but tropical storms with winds up to 50 miles per hour occur on average of every two to three years. Tornado season runs from March through October, but April and May are the most tornado-prone months. Many reported tornadoes are waterspouts that do not come ashore.

2.7 Aesthetic Resources

The site for the proposed Jasper County Generating Facility is located in the Lower Coastal Plain Region of South Carolina. The visual character of local landscape is fairly typical of the Lower Coastal Plain Region. Topography in this region is generally flat, limiting long distance views. Much of the area is forested while other areas have been cleared for agricultural purposes. Logging operations are common and can alter the visual character of the area in the short term.

No parks or designated recreational areas are located within close proximity of the site. The most sensitive amenities near the project site are scattered residences. The closest is the residence on the subject property, although a high-voltage electric transmission line already exists, interrupting the view between the residence and the proposed facility site.

2.8 Ambient Noise Quality

The area surrounding the proposed Jasper County Generating Facility site is predominantly rural. Primary ambient noise sources consist of distant and local traffic, birds and insects (particularly at night). Additional noise sources in the area are attributable to agricultural and silvicultural operations, but typically are seasonal and/or temporary in duration.

2.9 Ambient Air Quality

2.9.1 National Ambient Air Quality Standards

The 1970 Amendments to the Clean Air Act (CAA) gave the U.S. Environmental Protection Agency (USEPA) specific authority to establish the minimum level of air quality which all states would be required to achieve. These minimum values or standards were developed to protect the public health (primary) and welfare (secondary). The federally promulgated standards, adopted by South Carolina as state standards, which the proposed facility must comply with, are presented in Table 2-A.

Table 2-A: Ambient Air Quality Standards

Pollutant	Averaging Period ⁽²⁾	National AAQS ⁽¹⁾		SC Regulation 62.5
		Primary	Secondary	
Sulfur Dioxide	Annual	80	-- ⁽³⁾	80
	24-hour	365	-- ⁽³⁾	365
	3-hour	-- ⁽³⁾	1300	1300
Particulate Matter (TSP)	Annual	-- ⁽³⁾	-- ⁽³⁾	75
PM-10	Annual	50	50	50
	24-hour	150	150	150
Carbon Monoxide	8-hour	10,000	-- ⁽³⁾	10,000
	1-hour	40,000	-- ⁽³⁾	40,000
Ozone	1-hour	235	235	235
Nitrogen Dioxide	Annual	100	100	100
Lead	3-month	1.5	-- ⁽³⁾	1.5
<p>(1) All standards in this table are expressed in $\mu\text{g}/\text{m}^3$.</p> <p>(2) Short term ambient standards may be exceeded once per year; annual standards may never be exceeded. Ozone standard is attained when the expected number of days of an exceedance is equal to or less than one.</p>				

The 1990 CAA Amendments called for a review of the ambient air quality of all regions of the United States. By March 15, 1991, states were required to file with USEPA designations of all areas as either attainment, non-attainment or unclassifiable based on compliance with the air quality standards listed in Table 2-A. Areas of the country which had monitored air quality levels equal to or better than these standards (i.e., ambient concentrations less than a standard) as of March 15, 1991, became designated as "attainment areas," while those areas where monitoring data indicated air quality concentrations greater than the standards became known as "non-attainment areas". Currently Jasper County is classified as being in attainment or unclassified of all air quality standards.

2.9.2 Prevention of Significant Deterioration

Major new sources or major modifications to existing major sources located in attainment areas are required to obtain a Prevention of Significant Deterioration (PSD) permit prior to initiation of construction. A major stationary source is defined as either one of the sources identified in 40 CFR 52.21 and which has a potential to emit 100 tons or more per year of any regulated pollutant, or any other stationary source which has the potential to emit 250 tons or more per year of a regulated pollutant. Since the proposed Jasper County Generating Facility will exceed the PSD threshold and be classified as a major stationary source of air pollutants, the facility will be subject to comply with PSD increments.

PSD regulations specify that new major sources or modifications to existing major sources may only change baseline air quality by a defined amount. This limited incremental degradation is known as a PSD increment. Table 2-B presents the PSD increments that have been established for PM₁₀, SO₂, CO and NO_x.

2.9.3 Ambient Air Quality Data

In accordance with requirements of 40 CFR 52.21(m) any application for a PSD permit must contain an analysis of existing ambient air quality data in the area to be affected by the proposed project. Ambient air monitoring for a period of up to one year may be required to properly satisfy this monitoring requirement. This condition may be waived if a project would cause an impact less than EPA-Specified de minimis monitoring levels. The air dispersion analysis of the proposed project indicates all off-site impacts will be less than PSD significance thresholds. In March 2000, SCE&G requested and was granted a waiver by SC DHEC for a pre-construction/application ambient monitoring program. The requested waiver was granted for the following pollutants: SO₂, TSP, PM₁₀, NO_x, CO and Lead. Based on the South Carolina ambient air quality data for ozone, which is "representative of the area of concern," SCE&G also requested a waiver from the requirement for an ozone pre-construction ambient monitoring program.

Table 2-B: Allowable PSD Increments and Significant Impact Levels ($\mu\text{g}/\text{m}^3$)

Pollutant	Averaging Time	PSD Increments		Class II Area Significant Impact Levels
		Class I	Class II	
Particulate Matter (PM_{10})	Annual Arithmetic Mean	4	17	1
	24-hour Maximum	8	30	5
Sulfur Dioxide	Annual Arithmetic Mean	2	20	1
	24-hour Maximum	5	91	5
	3-hour Maximum	25	512	25
Carbon Monoxide	8-hour Maximum	NA	NA	500
	1-hour Maximum	NA	NA	2,000
Nitrogen Dioxide	Annual Arithmetic Mean	2.5	25	1
Note: Particulate Matter (PM_{10}) = particulate matter with aerodynamic diameter $\leq 10 \mu$ $\mu\text{g}/\text{m}^3$ = micrograms per cubic meter NA = Not applicable, i.e., no standard exists. Source: 40 CFR 50; 40 CFR 52.21, 40 CFR 51.165				

2.9.4 Meteorological Data for Air Dispersion Modeling

EPA Guideline on Air Quality Models suggests five years of representative meteorological data for regulatory refined modeling. Per discussions with SC DHEC and review of the *SC Air Quality Modeling Guidelines*, the appropriate surface and upper air meteorological data for ISCST3 refined modeling applications in Jasper County are from the Savannah, Georgia NWS and Charleston, South Carolina NWS, respectively. The recommended five-year data set for this county is 1984-1988.

2.10 Population and Demographics

The proposed Jasper County Generating Facility is located in Jasper County, South Carolina. The project area can be characterized as rural, but transitioning to industrial and residential land uses. The proposed site is located in southeastern South Carolina, off of SC Route 34 (Purysburg Road), west of Highway 17.

2.10.1 Population

Jasper County is expected to experience a 46 percent increase over its 1990 population (SCDHEC, 1999). Based on U.S. Census Bureau data, the 1990 population of Jasper County was 15,487. Data from the 2000 Census shows Jasper County having 20,678 persons. The population of the county is expected to increase to 22,600 by 2010 (SCDHEC, 1999). U.S. Census Bureau data for 2000 indicates that there are 7,928 housing units in Jasper County averaging 2.75 persons per household. Of that number, the ownership rate is approximately 78 percent. Median household income for Jasper County is \$25,154, which is below the statewide median (\$33,325).

2.10.2 Facility Workforce

The construction workforce for the proposed facility is expected to be approximately 800 people at the peak of construction. Once in operation the facility is expected to employ roughly 25 full-time personnel. A temporary workforce may be needed periodically during certain facility maintenance operations.

2.10.3 Traffic and Transportation

The proposed Jasper County Generating Facility is located approximately 8 miles north of Interstate 95. To the east of the site, U.S. Highway 321 runs parallel to SSR 34 and is readily accessible from the proposed facility location. Primary access to the facility will be from SSR 34. The nearest major airport is in Savannah.

During construction, it is estimated that a maximum of 300 vehicles per day will access the site. An estimated 35 construction material trucks (e.g. flatbeds, dump trucks, etc.) per day are estimated during construction. Typical traffic during operation of the proposed facility is expected to consist of roughly 25 vehicles per day.

3.0 ENVIRONMENTAL CONSEQUENCES

3.1 Land Use

Approximately 45 acres of the project site will be developed into the power generating facility. The majority of this area is upland forest and agricultural land. The area to be developed is located south of the existing transmission lines, away from the existing residence. Within the area proposed for development, there is an approximately 1.8 acre wetland that will remain undeveloped. Around the wetland area, SCE&G will maintain a 75-foot permanent buffer. An additional 27 acres will be utilized during construction for parking and equipment laydown areas. This area is located within previously disturbed land. Development of the Jasper County Generating Facility will cause the permanent conversion of approximately 45 acres of upland forest and agricultural land to industrial use. However, this is not considered a significant impact since similar land use is abundant near the project area.

3.2 Water Resources

There are no perennial surface waters, other than wetlands, located within the project boundary. The closest surface water is the Savannah River located approximately one mile to the southwest. The proposed facility will not be located within a recorded 100-year flood boundary (Zone A, based on FEMA, firm community panel 450112 0125B, dated 9-29-86).

3.2.1 Water Quality During Construction

Construction of the proposed facility may increase the potential for erosion and sediment-laden runoff into the Savannah River system. However, none of the Savannah River swampland found on the project site will be developed. In fact, SCE&G will maintain a minimum 75-foot buffer around the swamplands, therefore it is doubtful that runoff from construction of the facility will reach the river. Additionally, in planning the project, SCE&G has incorporated measures to avoid, minimize or mitigate for potential effects to water resources. SCE&G will implement appropriate construction and environmental protection measures coupled with best management practices to further minimize impacts to water resources.

3.2.2 Water Quality During Operation

During operation of the facility, approximately 8,150 gallons of water per minute will be utilized at peak flow rate. Water will be obtained from BJWA for cooling as well as general facility use. Water used for cooling, will either be recycled, evaporated or discharged to an existing BJWA POTW facility. Cooling water sent to the POTW will be treated and discharged to a receiving stream in accordance with the POTW's National Pollutant Discharge Elimination System (NPDES) permit. The Jasper County Generating Facility will not discharge water directly into a receiving stream.

3.3 Terrestrial and Aquatic Resources

3.3.1 Upland Resources

As described earlier, the upland community types present within project area include pine plantation, pine upland, upland island and agricultural. Vegetative characteristics of these areas have been modified from previous timber and agricultural management. Approximately 45 acres of upland forest and agricultural land will be lost to the construction of the proposed facility. However, due to the abundance of similar habitat and land use types in close proximity to the project site, this loss is not considered significant.

3.3.2 Wetland Resources

Based on the wetland delineation, the project site contains approximately 83 acres of forested wetland. The majority of the wetlands are part of the Savannah River swampland. However, SCE&G has designed the facility so that no wetlands will be directly impacted. In fact, SCE&G will maintain a 75-foot buffer around wetland areas. This buffer coupled with appropriate environmental protection measures and best management practices during construction will minimize or even avoid indirect impacts to wetlands from potential runoff.

3.3.3 Wildlife

During construction, mobile wildlife species such as birds and large mammals will be dispersed into adjacent areas. However, less mobile species may incur direct loss due to initial land clearing and grading. Development of the proposed generating facility will cause the direct loss of approximately 45 acres of habitat suitable of supporting wildlife typical of the area. However, due to the abundance of similar habitat and the vast expanse of forested wetlands west of the site, this loss is not considered consequential.

3.3.4 Fisheries

As stated in Section 2.3.3, the closest surface water to the site is the Savannah River. In this reach, the Savannah River is considered a warmwater fishery. Construction and subsequent operation of the Jasper County Generating Facility will not directly affect the Savannah River. Therefore, no fisheries will be directly impacted by the proposed project.

3.3.5 Rare, Threatened, and Endangered Species

Based on field surveys, no state or federally listed threatened or endangered species were observed within the project area. Therefore, no direct impacts to listed species are expected. However, potentially suitable habitat was identified for RCW (Milliken, 2001). A portion of this habitat will be

directly impacted from the construction of the facility. However, due to the abundance of potentially suitable RCW habitat near the project area, this loss is not expected to significantly impact RCW.

3.4 Cultural Resources

An intensive cultural resource survey revealed that one previously unrecorded site and one isolated find occurs within the project area. The newly recorded site contained artifacts associated with Middle/Late Woodland and Mississippian occupations and included eighteenth/nineteenth century ceramics. The isolated find was the remains of the Wethersbee School, a two room building built prior to 1937. However, neither site is recommended as being eligible for the NRHP. Therefore, construction and subsequent operation of the proposed facility is not expected to adversely impact cultural resources or historic structures eligible for listing on the NRHP.

3.5 Geology, Soils and Seismology

3.5.1 Geology

The geology of the area is typical for the region and is not expected to pose any unique construction problems. Therefore, foundation design is expected to be typical for facilities of this nature. However, site specific engineering data, such as soil borings, will be utilized to design the facility to be consistent with the underlying geologic features of the site.

3.5.2 Soils

The Eulonia association is most conducive to urban uses and is conveniently mapped adjacent to Puryburg Road. All delineated soil series are rated slight in the erosion hazard category. Therefore, the potential for erosion during construction is significantly decreased. However, prudent construction, erosion control measures, and best management practices will be used to avoid any potential short-term impacts. Grading and earthwork activities will comply with the requirements of the South Carolina Sediment, Erosion, and Storm Water Management Program.

3.5.3 Seismology

As described previously, this region is characterized by shallow earthquakes as opposed to deeper, stronger shocks experienced in other regions of the country. The last significant earthquake in the region occurred in 1886. However in recent years, the Coastal Plain area has been much less active. Therefore, there are no major concerns for the site as long as appropriate seismic parameters are considered in the final design.

3.6 Aesthetics

Construction of a power generating facility in a predominantly rural area will alter the visual character of the region. To mitigate visual effects, SCE&G has designed the facility using a 100-foot buffer along SSR 34. In addition, SCE&G is maintaining all of the Savannah River swamplands to the west of the site. Therefore, the remaining forest will help reduce visibility of the facility from the surrounding areas. The exception will be the emission stacks, which may be visible for some distance from the plant. However, the stacks will be silhouetted against the skyline, which lessens the visual impact. Furthermore, since there are no designated scenic or recreation areas nearby, the change in visual impact is not expected to be consequential.

3.7 Noise Quality

3.7.1 Noise Quality During Construction

Noise from construction activities associated with the project will be audible to nearby residents. However, construction noise would generally take place only during daylight hours and would be limited in duration. Based on construction noise analysis conducted for similar construction projects, noise levels of 60 dBA or above would occur sporadically over the construction period and would extend up to 1,200 feet from the facility.

3.7.2 Noise Quality During Operation

Sound associated with the facility operation will be produced by the gas turbine inlet, casing, and outlet; the side walls and exhaust of the heat recovery steam generator; the casing of the steam turbine generator; the mechanical draft wet cooling tower; the side walls and cooler fans of the main power and service transformers; the fuel gas metering and control systems, auxiliary motors, pumps, fans, compressors, and valves. Facility equipment will operate continuously and produce a steady sound 24-hours per day and seven days per week. The nearest noise sensitive areas are two residences. The closest, located just east of the proposed facility will be relocated. The other, will become the facility manager's residence.

3.8 Air Quality

3.8.1 Air Quality During Construction

Air pollution emissions during construction of the facility are expected to result from the operation of equipment and vehicles, which will generate dust. The effects of construction are expected to be of short duration and to be minor. Emissions estimates for construction activities are listed in Table 3-A and are based on EPA emissions factors for diesel powered heavy-duty construction equipment and a four-month construction period. These factors are for heavy construction operations on a five acre disturbed area with earth moving activities lasting two months.

The impact of construction on the environment would be localized and would persist only for the duration of construction activities. Fugitive dust emissions would be controlled as required by local or state regulations by using water sprays or other suppressants.

Table 3-A: Air Pollutant Emissions From Construction Activities in Tons

SOURCE	CO	HC	NO _x	PM
Heavy-duty construction equipment	1.54	0.44	5.76	0.33
Fugitive dust (heavy construction operations)	-	-	-	12.0
Totals	1.54	0.44	5.76	12.33

3.8.2 Air Quality During Operation

The primary sources of pollutant emissions at the Jasper County Generating Facility will be the natural gas-fired or distillate fuel oil-fired combustion turbines, including duct burners. Much smaller quantities of criteria pollutants are emitted from an emergency diesel generator, one multi-cell cooling tower and three distillate fuel oil storage tanks.

The Jasper County Generating Facility will release pollutants regulated by the EPA and SC DHEC into the atmosphere. The proposed project will be a major source of NO_x, CO, VOC, PM₁₀, SO₂ and H₂SO₄, and will have significant levels of Beryllium (see Table 3-B). These pollutants will, therefore, be subject to full PSD review. Emissions of Lead have a PTE (Potential to Emit) less than the significance threshold and no further review under PSD regulations is required. SCE&G has submitted a PSD application to the SC DHEC. The proposed energy facility will employ Best Achievable Control Technology (BACT) for NO_x, VOC, CO, SO₂, PM₁₀, H₂SO₄ and Beryllium to minimize air emissions. The facility will not be a major source of hazardous air pollutants.

3.8.3 Class I Area Impact Analysis

PSD regulations require that facilities within 100 km of a Federal Class I area perform a modeling evaluation of ambient air quality in terms of Class I PSD Increments and Air Quality Related Values (AQRVs). In addition, large projects between 100 and 200 km or more from a Class I area may be requested to conduct an evaluation of air quality impacts by the Federal Land Managers (FLMs). The proposed project location is within 200 km of three national wildlife refuges. The proposed facility is approximately 105 km from the Wolf Island National Wildlife Refuge, approximately 150 km from the nearest boundary of the Cape Romain National Wildlife Refuge, and approximately 170 km from the nearest boundary of the Okefenokee National Wildlife Refuge. Therefore, a PSD Class I impact analysis is required. Class I air dispersion modeling will be performed for the proposed project to determine the air quality impacts it may have on the three aforementioned Class I areas.

3.8.4 Vegetation and Soils

The project lies in an area of primarily agricultural use with surrounding swamp lands. No significant off-site impacts are expected from the proposed action. Therefore, the potential for adverse impacts to either soils or vegetation is minimal. Modeling was performed based on the facility's PTE to predict maximum ground level concentrations of SO₂, NO_x and CO. The results from the modeling indicated that no adverse impacts will occur to sensitive vegetation, crops or soil systems as a result of operation of the proposed facility.

3.8.5 Associated Growth

The Jasper County Generating Facility will employ approximately 800 personnel during the construction phase; but will employ approximately 25 personnel on a permanent basis. It is a goal of the project to hire from the local community where possible. There should be no substantial increase in community growth, or need for additional infrastructure. Therefore, it is not anticipated that the proposed action will result in an increase in secondary emissions associated with non-project related activities.

3.9 Waste Disposal and Fuel Handling

3.9.1 Solid Waste

The construction of the proposed Jasper County Generating Facility will produce various solid waste in the form of debris such as wood, sheet metal and concrete. SCE&G will properly dispose of all waste in accordance with applicable rules and regulations.

3.9.2 Domestic Waste

Domestic waste will be disposed of at a nearby wastewater treatment plant in accordance with applicable rules and regulations.

3.9.3 Fuel Handling

SCE&G will handle and store fuel in accordance with applicable rules and regulations. This includes developing a Spill Prevention, Containment and Counter Measure Plan (SPCC) for the facility.

Table 3-B: Hourly Criteria and PSD Pollutant Emissions Summary

Source Name	ESN	NO _x ⁽¹⁾	CO	VOC	SO ₂	H ₂ SO ₄ Mist	PM ₁₀	Pb / Be
Hourly Emission Rates (lb/hr)								
Three (3) Combined- Cycle Combustion Turbines; Natural Gas	CTG-1 thru CTG-3	87.0	191.1	32.7	19.2	(4)	72.0 ⁽²⁾	(3)
Three (3) Combined- Cycle Combustion Turbines; Fuel Oil	CTG-1 thru CTG-3	357.0	354.0	54.9	319.5	73.4	216.0 ⁽²⁾	0.084 / 0.002
Emergency Diesel Generator	GEN-1	59.5	15.8	1.7	0.9	(5)	1.9	(3)
One (1) Cooling Tower	CT-1	(5)	(5)	(5)	(5)	(5)	0.04	(5)
Three (3) Distillate Fuel Oil Tanks	FO-1 thru FO-3	(5)	(5)	0.4	(5)	(5)	(5)	(5)
Notes: Emission estimates for the turbines represent worst-case hourly emission rates over 50%, 75% and 100% load, and 20, 66 and 95 degrees.								
(1) NO _x emissions from the combustion turbines are based on an exhaust gas concentration of 3.5 ppmvd @ 15% O ₂ during natural gas operation, and 12 ppmvd @ 15% O ₂ during distillate fuel oil operation.								
(2) PM emissions include both filterable and condensable particulates.								
(3) Negligible.								
(4) For turbines in combined-cycle mode during natural gas operation, thermodynamic calculations have shown that sulfuric acid mist is not emitted when an SCR system is utilized. All SO ₃ is converted to ammonium sulfate. Ammonium sulfate emissions are included in the PM ₁₀ lb/hr total.								
(5) Not applicable.								

4.0 ENVIRONMENTAL EVALUATION PROGRAMS

4.1 Air Quality

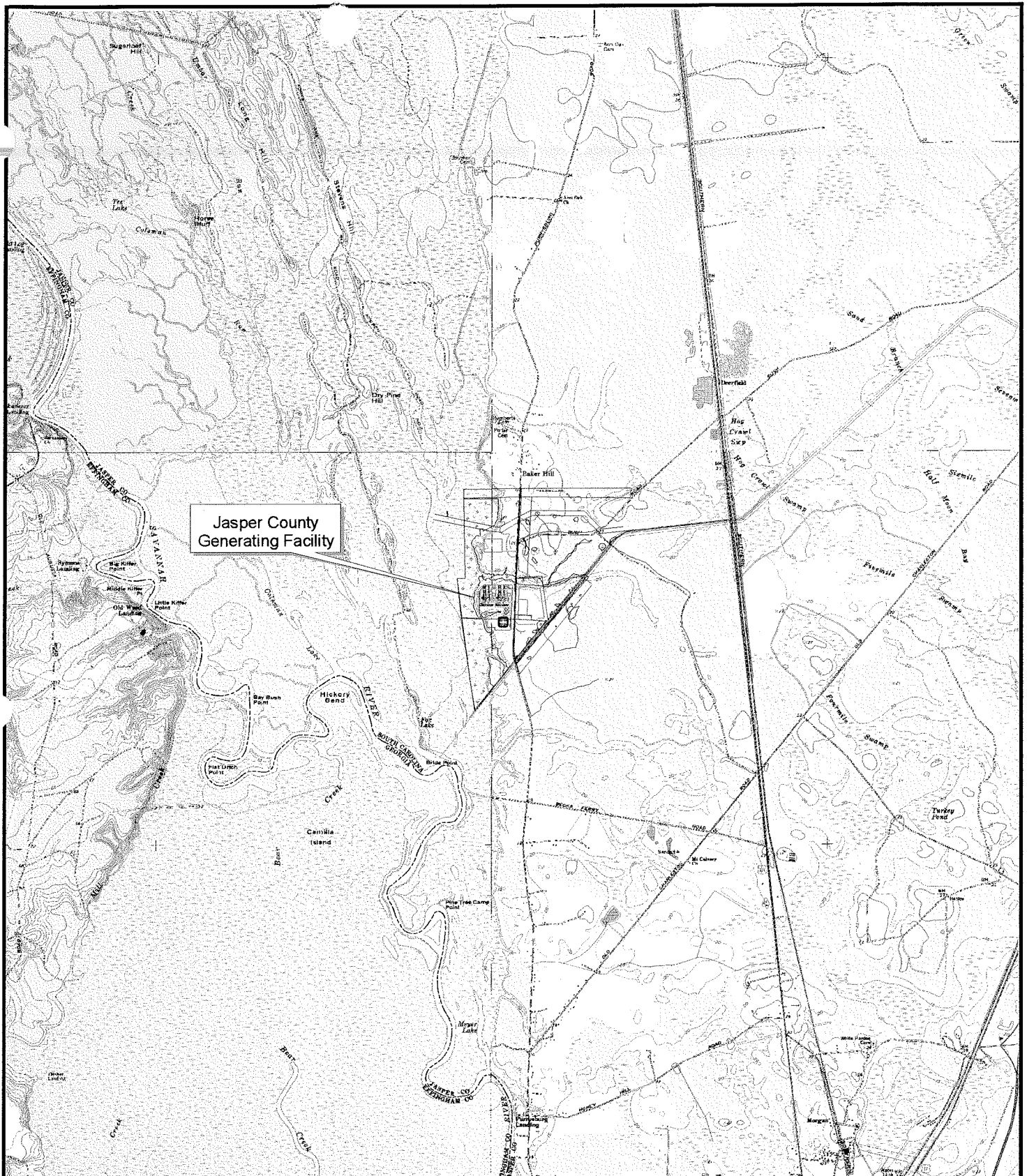
SCE&G has submitted a Prevention of Significant Deterioration (PSD) air permit application as required by US EPA regulations. As a necessary part of the PSD program, the application will include components such as Best Achievable Control Technology (BACT) analysis, ambient air quality monitoring, Class I area modeling including coordination with Federal Land Managers, and the evaluation of impacts to visibility, soils, and vegetation. SCE&G will address the monitoring provisions required under 40 CFR 60 and 40 CFR Parts 72, 73, and 75.

4.2 Water Quality

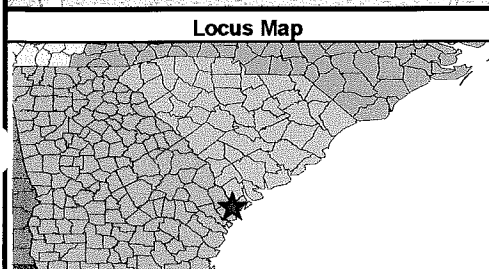
SCE&G will comply with the Stormwater Management and Sediment Reduction Regulation related to water quality protection, and will comply with the recommendations of the agencies (e.g., preparation of an Erosion and Sediment Control Plan). The erosion control measures and Best Management Practices (BMP's) employed will be sufficient to prevent any sediment movement beyond construction limits during a 25-year storm event. Cooling water that is not evaporated will be discharged through a POTW facility. Thus, there will be no facility discharge to nearby surface waters and an NPDES waste water discharge permit will not be required for this project.

5.0 REFERENCES

- Bollinger, G.A., A.C. Johnston, P. Talwani, L.T. Long, K.M. Shedlock, M.S. Sibol, and M.C. Chapman, 1991, *Seismicity of the Southeastern United States; 1698 to 1986*, p. 291-308, Neotectonics of North America: Geological Society of America, Decade Map Volume 1, 498p.
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- Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Method. Department of Army Waterways Experiment Station, Corps of Engineers, Vicksburg, MS. Technical Report Y-87-1. 100 pp.
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- National Oceanic and Atmospheric Administration (National Climatic Data Center). 2000. *1998 Local Climate Data- Annual Summary with Comparative Data*.
- USDA (Soil Conservation Service). 1980. Soil Survey of Beaufort and Jasper Counties, South Carolina. Soil Conservation Service in cooperation with the South Carolina Agricultural Experiment Station and the South Carolina Land Resources Conservation Commission.
- http://neic.usgs.gov/neis/states/south_carolina/south_carolina.html. USGS Fact Sheets- Earthquake History of South Carolina.
- <http://quickfacts.census.gov/qfd/states/45/45053.html>. Demographic information for Jasper County.



Jasper County
Generating Facility



N
W E
S

USGS QUADRANGLES:
Hardeeville, SC
Rincon, SC
Tillman, SC
Hardeeville NW, SC

Jasper County Generating Facility

Figure 1
REGIONAL TOPOGRAPHIC MAP

0 2 Kilometers

Date:
June 2001

Drawn by:
TOP

Project Number:
6147-018

ENSR
INTERNATIONAL

PROOF OF SERVICE

This is to certify that I, Brian Beltman, have caused to be mailed on the 31 day of October, 2001, one (1) copy of the Application to the South Carolina Public Service Commission by South Carolina Electric & Gas Company for a Certificate of Environmental Compatibility & Public Convenience & Necessity by placing a copy of same in the care and custody of the United States Postal Service, with proper first-class postage affixed thereto and addressed as follows:

C. Earl Hunter, Commissioner
S.C. Department of Health and
Environmental Control
2600 Bull Street
Columbia, SC 29201

Rodger E. Stroup, Director
S.C. Dept. Of Archives & History
8301 Parklane Road
Columbia, SC 29223

Dr. Paul Sandifer, Executive Director
S.C. Department of Natural Resources
PO Box 167
Columbia, SC 29202

Elizabeth S. Mabry, Executive Director
S.C. Dept. of Transportation
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Dr. Bruce Rippeteau
Director and State Archaeologist
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Ridgeland, SC 29936

Leroy Sneed, Chairman
Jasper County Council
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Mayor Rodney Cannon
Town of Hardeeville
PO Box 987
Hardeeville, SC 29927

Mayor Ralph Tuten
Town of Ridgeland
PO Box 1119
Ridgeland, SC 29936

Brian W Beltman

SWORN to before me this
31st day of October, 2001.

Christine W. W. W. W.
Notary Public for South Carolina

My Commission Expires: 9-13-11

PUBLIC NOTICE

South Carolina Electric & Gas Company is making Application to the South Carolina Public Service Commission on or about October 2, 2001, for a Certificate of Environmental Compatibility & Public Convenience & Necessity for the construction and operation of an 875 MW combined cycle electrical generating plant on a site located near Hardeeville, South Carolina. This Application is in accordance with the Code of Laws of South Carolina, 1976, Chapter 33, Title 58, as amended, entitled "Utility Facility Siting and Environmental Protection Act."

All parties may inspect maps, studies or other documents at South Carolina Electric & Gas Company's offices at 1426 Main Street, Columbia, South Carolina.

Any person wishing to comment on the Application or obtain additional information with regard thereto should contact in writing the South Carolina Public Service Commission, Post Office Box 11649, Columbia, South Carolina 29211, with a copy to Brian Beltman, South Carolina Electric and Gas Company, 8th Floor, Palmetto Center, 1426 Main Street, Columbia, South Carolina, 29218-0002.

LIST OF NEWSPAPERS IN WHICH PUBLIC NOTICE WILL BE PUBLISHED

The State, Columbia, South Carolina

The Hardeeville Times, Ridgeland, South Carolina

The Jasper County Sun, Ridgeland, South Carolina

The Beaufort Gazette, Beaufort, South Carolina

STATE OF SOUTH CAROLINA

VERIFICATION

COUNTY OF RICHLAND

PERSONALLY appeared before me Sarena D. Burck who on oath says that SOUTH CAROLINA ELECTRIC & GAS is a corporation and is the Applicant in the within matter; that he/she is Deputy General Counsel of said corporation and as such is authorized to make this verification on its behalf; that he/she knows the contents of the foregoing Application for a Certificate of Environmental Compatibility & Public Convenience & Necessity and that the same is true to the best of his/her knowledge, information and belief.

Sarena D. Burck
Title: Deputy General Counsel

SWORN to before me this
28 day of Sept., 2001.

Linda V. Schreier
Notary Public for South Carolina

My Commission Expires: 10-18-01

1 DIRECT TESTIMONY OF

2 NEVILLE O. LORICK

3 ON BEHALF OF

4 SOUTH CAROLINA ELECTRIC & GAS COMPANY

5 DOCKET NO. 2001-420-E

6

7 Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS AND POSITION
8 WITH SOUTH CAROLINA ELECTRIC AND GAS COMPANY (SCE&G).

9 A. Neville O. Lorick, 1426 Main Street, Columbia, South
10 Carolina. My position is President and Chief
11 Operating Officer of South Carolina Electric & Gas
12 Company (SCE&G).

13 Q. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND AND
14 PROFESSIONAL EXPERIENCE.

15 A. I have a B.S. in Mechanical Engineering from The
16 University of South Carolina. I began my employment
17 with SCE&G in April 1971, as a student assistant and
18 was hired full time in January 1975, as an engineer.
19 In March 1978, I became the Assistant Plant Manager
20 for our Canadys Station Fossil Steam Plant and in
21 September 1982, was promoted to Plant Manager. In
22 July 1988, I was promoted to General Manager, Fossil
23 and Production Operations. In this position, I was
24 responsible for all of the Company's Fossil Fuel
25 Plants and the Fossil Production Corporate Staff. In

1 December 1992, with reorganization, my title was
2 changed to Manager of Production Support. In December
3 1994, I was named Manager of Operation Services and my
4 responsibilities included the management of Support
5 Staff and their interface with the Fossil/Hydro
6 Departments. In July 1995, I was promoted to the
7 position of Vice President of Fossil & Hydro
8 Operations. In December 2000, I was elected by the
9 SCANA Board of Directors to be President and Chief
10 Operating Officer of SCE&G.

11 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

12 **A.** The purpose of my testimony is to provide to the
13 Commission an overview of the comprehensive planning
14 that the Company has undertaken in connection with the
15 proposed Jasper County Generation Project; to explain
16 to the Commission how we at SCE&G arrived at the
17 decision reflected in this application; and to discuss
18 why we believe this decision best addresses the needs
19 of the Company and our customers.

20 The decision of SCE&G is to build a combined-cycle
21 power plant on a rural site adjacent to the Savannah
22 River near Hardeeville in Jasper County, South
23 Carolina. The witnesses who will follow me will
24 discuss our planning process and provide our analysis
25 and support for each decision made.

1 Dr. Joseph Lynch will address our assessment of
2 the capacity need for electric power in the SCE&G
3 service area and why we believe the assessment is
4 correct. He will also discuss the financial and
5 economic reasoning that underlies the decisions we
6 have made regarding the construction of a new plant at
7 the Jasper County site.

8 Mr. Stephen M. Cunningham will describe the
9 production system and other infrastructure required to
10 support the plant and will discuss arrangements with
11 Duke-Flour Daniel for the engineering, procurement,
12 and construction of the project.

13 Finally, Mr. Jack Preston will explain the
14 environmental considerations involved with the Jasper
15 County plant site and affirm the Company's commitment
16 to protecting the environment.

17 Through this testimony we will demonstrate to the
18 Commission that our decision-making has been
19 consistently aimed at providing reliable, safe, high
20 quality, cost-effective power for the customers of
21 SCE&G. In all these considerations our decisions
22 reflect our best judgment.

23 **Q. PLEASE EXPLAIN TO THE COMMISSION HOW SCE&G INITIATED**
24 **THE PROCESS THAT LED TO THE DECISION FOR THE JASPER**
25 **COUNTY GENERATION PROJECT.**

1 **A.** Similar to the past processes with respect to
2 generation construction, our planning process emerged
3 from SCE&G's annual load and resource forecast. Based
4 on our projections of growth in peak demand on our
5 system after 2001, we anticipate the need for 254
6 megawatts of additional capacity by 2004 and 480
7 megawatts by 2006. These projections of need take
8 into account the capacity to be added to the system by
9 the Urquhart Re-powering Project and the upgrades to
10 the Fairfield Pumped Storage Plant.

11 We considered meeting this need for capacity by
12 adding two combustion turbines (CTs) of 150 megawatts
13 each in 2004 and a third CT in 2006. However, we found
14 that it was more economical to add the two CTs in a
15 combined-cycle configuration. This would add 459
16 megawatts to the system in 2004 and would produce
17 electricity more efficiently than in a simple cycle
18 configuration. Finally, we determined that if we
19 increased the scale of the combined-cycle plant by
20 using three CTs and supplementary duct-firing, then
21 the cost of incremental capacity would be about 60%
22 less than the cost of base capacity. We would not,
23 however, be comfortable adding that much total
24 capacity -- 875 megawatts -- in 2004 for our
25 territorial customers. Therefore, we arranged a firm,

1 long-term sale of 250 megawatts for nine years to
2 carry the cost of the incremental capacity until our
3 South Carolina customers need it. This process will
4 lock-in economy of scale benefits of the larger plant
5 for our native load customers. When we compared this
6 option to the other options available, it was clearly
7 the best choice for us and for our customers. Dr.
8 Lynch will present more of the details of these
9 comparisons and will discuss our reserve margin range
10 of 12% to 18%.

11 In short, the decision to build a plant in Jasper
12 County, using three combustion turbine generators in a
13 combined-cycle configuration yielding 875 megawatts of
14 capacity is a prudent solution for meeting our
15 customers' needs for economical and reliable energy.
16 The total project cost, excluding transmission system
17 improvements but including Allowance for Funds Used
18 During Construction (AFUDC), will be approximately
19 \$450,000,000.

20 **Q. MR. LORICK, WERE THERE ANY OTHER FACTORS THAT ENTERED**
21 **INTO THE DECISION-MAKING PROCESS?**

22 **A.** Yes, another important aspect of the decision-making
23 process relates to the availability and volume of
24 natural gas necessary for the operation of the

1 proposed combined-cycle turbine generators at the
2 Jasper County site.

3 **Q. WHAT FUEL WILL BE USED TO FIRE THE PROPOSED GAS TURBINE**
4 **UNITS AT THE JASPER COUNTY SITE?**

5 **A.** These units will burn natural gas as the primary fuel,
6 with distillate (No. 2) fuel oil as the secondary fuel.

7 **Q. HOW WILL NATURAL GAS BE SUPPLIED?**

8 **A.** The Jasper County plant site is located close to the
9 Savannah River near the point where SCG Pipeline, Inc.
10 (SCG), a recently formed SCANA subsidiary, is
11 developing plans for connecting to and receiving
12 natural gas from interstate pipelines and from the
13 liquefied natural gas (LNG) facility near Savannah,
14 Georgia. We will obtain our gas requirements via SCG.

15 **Q. WHAT VOLUMES OF NATURAL GAS WILL BE REQUIRED AND UNDER**
16 **WHAT CONTRACT TERMS?**

17 **A.** The plant would consume approximately 155,000
18 dekatherms (DT) of natural gas a day at 100% load
19 factor. The Company plans to contract with SCANA
20 Energy Marketing Inc. (SEMI) for 120,000 DT of firm
21 natural gas supply and to purchase the balance on an
22 interruptible basis. This will allow the units to be
23 available and utilized when our electric generation
24 economic dispatch model dictates their need.

1 Q. INTERRUPTIBLE NATURAL GAS IS NOT ALWAYS AVAILABLE. HOW
2 WILL THE PLANTS BE FIRED IF NATURAL GAS IS INTERRUPTED?

3 A. The peak period for electric usage occurs in the summer
4 when there is usually very little, if any, curtailment
5 of natural gas supply. We plan to have natural gas
6 available to burn at all times except during the severe
7 winter period. When natural gas is not available, we
8 will fire the units on distillate oil. The Company
9 will have oil storage tanks with 3.75 million gallons
10 capacity to supply these units.

11 Q. PLEASE DESCRIBE HOW THE PROPOSED JASPER COUNTY
12 GENERATING FACILITY WILL BE CONNECTED TO THE GRID.

13 A. Electricity generated by the plant will be delivered to
14 our customers by 230kV lines currently being designed
15 by Company personnel. Additionally, we are planning
16 interconnections from the substation on-site to the
17 Santee Cooper and Southern Company systems. SCE&G will
18 seek siting certification from the Commission for the
19 new transmission lines for this generating project
20 under a separate filing at the appropriate time.

21 Q. MR. LORICK, DO YOU HAVE ANY OTHER COMMENTS TO MAKE TO
22 THE COMMISSION?

23 A. Yes. All of the factors which I have discussed were
24 measured and carefully evaluated by SCE&G's senior
25 management, and this process resulted in a

1 recommendation to proceed with the proposed Jasper
2 County Generation Project. Senior Staff carried this
3 recommendation to the SCANA Board of Directors, and the
4 Board accepted the President's recommendation. Now the
5 Company is before the Commission respectfully seeking
6 approval for siting certification for that project.

7 **Q. DOES THAT CONCLUDE YOUR TESTIMONY?**

8 **A.** Yes, it does.

DIRECT TESTIMONY OF

JOSEPH M. LYNCH

ON BEHALF OF

SOUTH CAROLINA ELECTRIC & GAS COMPANY

DOCKET NO. _____

Q. Please state your name, business address and current position with South Carolina Electric and Gas Company.

A. Joseph M. Lynch, 1426 Main Street, Columbia, South Carolina. My current position is Manager of Resource Planning.

Q. Describe your educational background and professional experience.

A. I graduated from St. Francis College in Brooklyn, New York with a Bachelor of Science degree in mathematics. From the University of South Carolina I received a Master of Arts degree in mathematics, an MBA and a Ph.D. in management science and finance. I was employed by SCE&G as a Senior Budget Analyst in 1977 to develop econometric models to forecast electric sales and revenue. In 1980, I was promoted to Supervisor of the Load Research Department. In 1985, I became Supervisor of Regulatory Research where I was responsible for load research and electric rate design. In 1989, I became Supervisor of Forecasting and Regulatory Research, and, in 1991, I was promoted to my current position of Manager of Resource Planning.

Q. Briefly summarize your current duties.

1 A. As manager of Resource Planning I am responsible for producing
2 SCE&G's forecast of energy, peak demand and revenue; for developing the
3 Company's generation expansion plans; and for overseeing the Company's
4 load research program.

5 **Q. What is the purpose of your testimony?**

6 A. The purpose of my testimony is to demonstrate the Company's need for
7 additional capacity, by presenting the Company's load and resource forecast
8 and reserve margin requirements, and to show that the Jasper Combined Cycle
9 Project is the most cost effective option for meeting this need.

10 **Q. Discuss the Company's growth in peak demand.**

11 A. The peak demand on our system is shown in Exhibit No. ____ (JML-1).
12 The graph shows the actual peak demands from 1990 through 2001 as well as
13 those projected for 2002 through 2010. As can be seen in the graph, we
14 expect the historical growth in peak demand to continue through the forecast
15 period. The average annual change in peak demand over the 11-year period
16 from 1990 to 2001 was 88 megawatts per year, and the average change over
17 the next nine years, from 2002 to 2010, is forecasted to be 88 megawatts per
18 year.

19 **Q. Discuss the Company's projected capacity needs?**

20 A. The purpose of Exhibit No. ____ (JML-2) is to show the Company's
21 need for more capacity. It contains the Company's projected firm peak
22 demand in column (C). The firm peak demand is the difference between our
23 gross peak and our demand side management (DSM) capacity. It is also the

1 level of demand that the Company plans to meet with a firm supply. Our
2 supply required is shown in column (E) of Exhibit No. _____(JML-2). This is
3 the sum of the firm peak demand and the midpoint (15% of peak load) of our
4 reserve margin range, which I will discuss later in my testimony. Column
5 (G) shows our supply shortfall. This is the difference between our existing
6 supply capacity of 4,938 megawatts and the projected required capacity.
7 Existing capacity includes 350 megawatts of additional capacity related to the
8 Urquhart Re-Powering Project, which is scheduled to come on line during
9 2002. By 2004 we project a supply shortfall of 254 megawatts and by 2006,
10 480 megawatts.

11 **Q. Briefly describe how you forecasted the firm peak demand.**

12 A. The first step in forecasting the peak demand is to project the annual
13 kilowatt-hour energy by class of customer. The seven major classes of
14 customers are residential, commercial, industrial, other public authorities,
15 public street lighting, municipalities and cooperatives. In all we have
16 developed over 100 econometric and time series models relating energy
17 consumption, customer growth, weather and economic variables. In the short
18 term, we produce forecasts in great detail, in most cases by rate and class and
19 Standard Industrial Classification (SIC) code where appropriate. In short term
20 forecasts, which we define as forecasts for the next two years, we rely heavily
21 on weather correlation models, recent growth trends, industrial production
22 indices and information from large customers about their upcoming expansion
23 plans. In the longer term, we rely on annual models that correlate energy

1 consumption with population growth, income growth, employment growth
2 and industrial production. Once the energy forecast is made the second step is
3 to analyze the load characteristics of each customer class and to derive
4 average coincident load factors to estimate the peak demand related to that
5 class' level of energy consumption. These load factors come from the
6 Company's Customer Load Survey Program, which has been in place since
7 the early 1970s. On average our forecast error over the last several years is
8 about 1%.

9 **Q. What are the major assumptions used in the forecast?**

10 A. We rely on Standard & Poor's Data Resources International (DRI) for the
11 historical and projected economic variables for the State of South Carolina
12 and its counties, as well as for the nation. DRI is a well-known economic
13 forecasting firm owned by The McGraw-Hill Companies. We also base our
14 forecasts on normal weather, which we define as the average weather over the
15 last 15 years. In previous years we used a 30-year average but we have found
16 that the 15-year average approximates the next succeeding year's weather
17 more closely. The 15-year average weather results in a small increase in
18 forecasted sales of 0.3%. In summary, we conclude that the economic growth
19 that our service territory has seen in the past will continue in the future and
20 that our customers' energy and demand needs will grow accordingly.

21 **Q. Describe the Company's existing supply capacity.**

22 A. The Company currently has 4,588 megawatts of supply available. Exhibit
23 No.__(JML-3) shows the composition of this supply.

1 **Q. What demand-side resources are available?**

2 A. The Company has 282 megawatts in demand-side resources. Under the
3 umbrella of demand-side resources, we include interruptible load (190
4 megawatts) and standby generation (92 megawatts).

5 **Q. Does the Company have any conservation or efficiency based DSM**
6 **programs?**

7 A. The Company is a strong proponent of the wise use of energy. In the past
8 the Company has offered a number of conservation-type programs subsidizing
9 the installation of high efficiency equipment and increased levels of
10 insulation. These programs have helped to raise customer awareness and
11 helped encourage more stringent building codes and appliance standards. The
12 impact of these efficiency measures on customer consumption is captured by
13 our statistical models and reflected in our projections.

14 **Q. What is the Company's prudent reserve margin range?**

15 A. At present the Company believes that the prudent level at which to set the
16 reserve margin is in the range of 12% to 18%. During the Siting Hearing for
17 the Urquhart Re-Powering Project, the Company said its minimum reserve
18 margin was 497 megawatts or about 12.1%. This was a minimum level,
19 which fell within our current acceptable range.

20 **Q. Please explain your reserve margin range.**

21 A. There are three components to the 12% to 18% range for reserve margin.
22 They are: operating reserves (199 megawatts), supply reserves (200 - 425
23 megawatts) and demand reserves (100 - 150 megawatts). The sum of these

1 three components make up the total reserve margin. The operating reserves
2 are set at 199 megawatts. This is the capacity that the Company is required to
3 make available as part of its operating agreement with the other members of
4 VACAR. VACAR is the Virginia-Carolina sub-region of SERC, the
5 Southeast Reliability Council.

6 Supply reserves, which are set in the 200 – 425 megawatt range, are
7 needed to address the risk that some units may be down-rated or forced out
8 because of mechanical problems or environmental constraints. Traditionally
9 the Company used 200 megawatts as the level of supply reserves also known
10 as contingency reserves. This level would cover about 50% of the summer
11 time outages. The higher level of 485 megawatts will cover 85% of the
12 outages.

13 The demand reserves are set in the range of 100 to 150 megawatts and
14 are related to two components: abnormal weather and forecast error. The
15 weather component is set at 100 megawatts. Based on statistical work
16 correlating load with weather, we believe an additional 100 megawatts of
17 capacity is currently sufficient to cover an increase in peak load related to
18 abnormally hot weather. Thus we set the lower level of demand reserves at
19 100 megawatts. We add 50 megawatts to this to get the high end of the range
20 because we expect on average about a 1% error in our peak demand forecast.

21 **Q. Discuss the process that led from the need for capacity to the Jasper**
22 **Combined Cycle Project.**

1 A. After quantifying the need for some form of capacity, the next step was to
2 determine what type of supply to add. We began by creating an expansion
3 plan of only peaking units, that is, simple cycle combustion turbines (CTs).
4 These peaking units have low capital costs but high operating costs. They are
5 designed to meet peak demands but not to run for very many hours. This CT
6 plan requires two 150 megawatt units in 2004, another 150 megawatt unit in
7 2006 and additional units every other year or so to meet our reserve margin
8 requirement. We next considered a combined cycle scenario in which the 300
9 megawatts of CT capacity in 2004 were connected to a heat recovery steam
10 generator and a steam turbine-generator. This combined cycle configuration
11 would generate energy more efficiently than the simple cycle units and since it
12 would add 449 megawatts to our system, it would meet our need for capacity
13 through 2006. We then compared the cost of these expansion plans to our
14 native load customers. The combined cycle plan was considered the better
15 plan because it had lower accumulated present worth of revenue requirements.

16 **Q. What was the next step?**

17 A. Since the combined cycle plan was more economical than the simple cycle
18 plan, we knew that paying the higher capital cost of a combined cycle plant
19 was more than compensated for by the lower operating costs. We carried this
20 trade-off between capital costs and operating costs a step further by
21 considering a coal plant. A coal plant has lower operating costs than a
22 combined cycle plant because coal is a cheaper fuel than natural gas.

1 However, a coal plant has capital costs that are more than twice that of a
2 combined cycle plant on a \$/kW basis.

3 **Q. How did the revenue requirements of a coal scenario compare to the**
4 **combined cycle scenario?**

5 A. When we looked at an expansion plan with a 400 megawatt coal plant in
6 2004, we found that the lower operating cost of coal did not balance out the
7 higher capital costs. The revenue requirements to our native load customers
8 would be higher if we added a coal plant.

9 **Q. What is the impact of increasing the size of the combined cycle plant**
10 **from 449 megawatts to 875 megawatts?**

11 A. The 449 megawatt combined cycle plant configured two combustion
12 turbines of 150 megawatts each and a combination heat recovery steam
13 generator and steam turbine-generator. The installed cost was about \$640 per
14 kW. The Company wanted to take advantage of the economies of scale that
15 result from building a larger unit. By adding a third combustion turbine along
16 with inlet chilling and duct firing, the capacity of the unit would be increased
17 to 875 megawatts at an installed cost of \$513 per kW. This meant that the
18 cost of the incremental capacity was only \$379 per kW, almost a 40% savings.

19 **Q. Do SCE&G's native load customers need 875 megawatts?**

20 A. They certainly will at some point but not in 2004. SCE&G, therefore, has
21 entered into a nine-year contract to provide 250 megawatts of firm capacity to
22 another supplier. The revenue from this contract will reduce the cost of this
23 expansion plan to our native load customers during this time frame and, at the

1 end of the contract period, the capacity will be available for our native load
2 customers' needs.

3 **Q. Does this capacity expansion plan result in the lowest cost to**
4 **SCE&G's native load customers?**

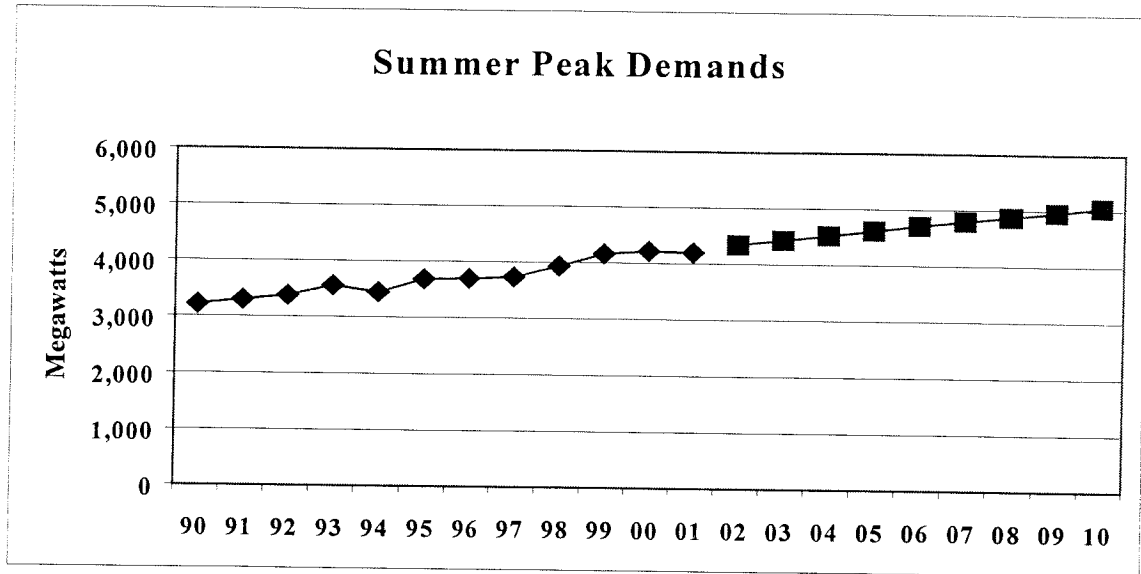
5 A. Yes, it does. In Exhibit No. _____(JML-4) I show the comparative
6 revenue requirements of the four plans discussed in my testimony. The plan
7 containing the 875 megawatt combined cycle plant, labeled "CC875", has the
8 lowest present worth of revenue requirements accumulated over 20 years.
9 The plan with the coal plant labeled "COAL" has the highest. The other two
10 plans, "CT" and "CC449", have revenue requirements that fall in between.

11 **Q. Have you studied the impact of higher gas prices on your results?**

12 A. Yes, we looked at the effect of a 50% increase in natural gas prices in all
13 future years. The 20-year present worth of revenue requirements of our
14 selected plan, CC875, increased by 8.4%. The plan with the coal plant was
15 the least sensitive to the increase in gas prices but even with higher gas prices,
16 the coal plant strategy was more costly for our native load customers.

17 **Q. Does this conclude your testimony?**

18 A. Yes it does.



Year	Peak
1990	3,222
1991	3,300
1992	3,380
1993	3,557
1994	3,444
1995	3,683
1996	3,698
1997	3,734
1998	3,935
1999	4,158
2000	4,211
2001	4,193
2002	4,344
2003	4,427
2004	4,515
2005	4,612
2006	4,711
2007	4,796
2008	4,876
2009	4,961
2010	5,050

	Gross Peak	DSM	Firm Peak	Midpoint Reserve Margin	Supply Required	Existing Supply	Supply Shortfall
	(MW) (A)	(MW) (B)	(MW) (C)	(MW) (D)	(MW) (E)	(MW) (F)	(MW) (G)
2002	4,626	282	4,344	652	4,996	4938	-58
2003	4,709	282	4,427	664	5,091	4938	-153
2004	4,797	282	4,515	677	5,192	4938	-254
2005	4,894	282	4,612	692	5,304	4938	-366
2006	4,993	282	4,711	707	5,418	4938	-480
2007	5,078	282	4,796	719	5,515	4938	-577
2008	5,158	282	4,876	731	5,607	4938	-669
2009	5,243	282	4,961	744	5,705	4938	-767
2010	5,332	282	5,050	758	5,808	4938	-870

Note: Existing Supply, Column F, includes 350 MW of additional capacity related to the Urquhart Re-Powering Project.

2001 Planning Capacity		
	In-Service <u>Date</u>	Summer <u>(MW)</u>
Coal-Fired Steam:		
Urquhart – Beech Island, SC	1953	236
McMeekin – Near Irmo, SC	1958	250
Canadys - Canadys, SC	1962	396
Wateree – Eastover, SC	1970	700
Williams – Goose Creek, SC	1973	615
D-Area – USDOE Savannah River Site	1995	35
Cope - Cope, SC	1996	422
Cogen South – Charleston, SC	1999	91
Total Coal-Fired Steam Capacity		<u>2,745</u>
Nuclear:		
V. C. Summer - Parr, SC	1984	644
I. C. Turbines:		
Burton, SC	1961	29
Faber Place – Charleston, SC	1961	10
Hardeeville, SC	1968	14
Urquhart – Beech Island, SC	1969	38
Coit – Columbia, SC	1969	30
Parr, SC	1970	60
Williams – Goose Creek, SC	1972	49
Hagood – Charleston, SC	1991	92
Urquhart No. 4 – Beech Island, SC	1999	48
Total I. C. Turbines Capacity		<u>370</u>
Hydro:		
Neal Shoals – Carlisle, SC	1905	5
Parr Shoals – Parr, SC	1914	14
Stevens Creek - Near Martinez, GA	1914	9
Columbia Canal - Columbia, SC	1927	10
Saluda - Near Irmo, SC	1930	206
Fairfield Pumped Storage - Parr, SC	1978	560
Total Hydro Capacity		<u>804</u>
Other: Long-Term Purchases		25
Grand Total:		<u>4,588</u>

Options	Net Present Value of Comparative Revenue Requirements (\$Million)
1) "CC875" Add 875 MW Combined Cycle Plant	\$6,679.3
2) "CC449" Add 449 MW Combined Cycle Plant	\$6,859.1
3) "CT" Add Combustion Turbines Only	\$6,901.6
4) "COAL" Add a 400 MW Coal Plant	\$6,925.7

	CC875	CC449	CT	COAL
2004	547.1	539.9	516.9	565.6
2005	576.6	579.8	560.8	596.6
2006	593.0	597.7	590.5	614.6
2007	597.4	613.2	606.1	627.0
2008	647.4	665.6	666.9	691.5
2009	680.9	698.0	700.5	708.1
2010	703.3	720.3	722.4	727.8
2011	747.3	764.2	769.1	781.2
2012	787.8	805.4	813.6	805.7
2013	819.9	832.4	841.4	844.9
2014	865.0	894.0	909.1	904.9
2015	914.9	962.4	976.5	951.7
2016	986.6	1035.2	1054.1	1021.7
2017	1057.0	1107.1	1134.4	1094.0
2018	1134.0	1183.9	1215.7	1165.4
2019	1224.4	1278.8	1315.1	1256.9
2020	1315.2	1373.5	1416.7	1348.9
2021	1422.9	1467.9	1519.3	1456.6
2022	1522.4	1593.7	1658.9	1579.9
2023	1641.2	1721.5	1792.0	1680.8

1 DIRECT TESTIMONY OF
2 STEPHEN M. CUNNINGHAM
3 ON BEHALF OF
4 SOUTH CAROLINA ELECTRIC & GAS COMPANY
5 DOCKET NO. 2001- E
6

7 Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

8 A. My name is Stephen M. Cunningham. My business address is 111 Research
9 Drive, Columbia, SC 29203.

10 Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

11 A. I am employed by South Carolina Electric and Gas Company (SCE&G) and
12 manage the development of new generation projects.

13 Q. DESCRIBE YOUR EDUCATIONAL BACKGROUND AND BUSINESS
14 EXPERIENCE.

15 A. I received a Bachelor of Science degree in Electrical Engineering from Clemson
16 University in 1972. I began my career with Duke Power Company in 1972
17 performing design work on coal and nuclear generating plants. In 1974 I was
18 employed by SCE&G to work on the design, construction and operation of the
19 V.C. Summer Nuclear Station. During my fifteen year affiliation with the nuclear
20 project I performed various engineering functions from design to management.
21 In 1989 I transferred to the fossil and hydro generation group where I managed
22 the design engineering organization. From 1992 through 1996 I was Plant
23 Manager at SCE&G's Wateree Station. In 1996 I moved to the Power Block

1 Services group where I currently manage and coordinate the development of
2 new generation projects.

3 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

4 **A.** The purpose of my testimony is to provide a general description of the proposed
5 Jasper County Generation Project.

6 **Q. PLEASE DESCRIBE THE JASPER COUNTY GENERATION PROJECT**
7 **WHICH SCE&G PLANS TO BUILD.**

8 **A.** SCE&G plans to build a combined cycle generating plant on a rural site near
9 Hardeeville in Jasper County, South Carolina. See my Exhibit No. ____ (SMC-1)
10 and ____ (SMC-2) for the location and general arrangement of the project. The
11 plant will be composed of three General Electric 7FA combustion turbine
12 generators, three heat recovery steam generators (HRSG) and one steam
13 turbine generator. The HRSGs convert heat in the exhaust from the combustion
14 turbines into steam, which then powers the steam turbine to generate additional
15 electricity. The combustion turbines will be equipped with inlet chilling to
16 maximize the output of the plant during hot weather. The plant will generate
17 approximately 775 net megawatts during the winter and 750 net megawatts
18 during the summer. The plant will have the capability to generate additional
19 "peaking" output of up to 120 megawatts using supplementary firing. This is
20 accomplished by burning additional fuel in burners located in the inlet duct to the
21 HRSGs, which produces more steam and more output from the steam turbine-
22 generator. The peak output from the plant will be approximately 900 megawatts
23 during the winter and 875 megawatts during the summer. When completed, this

generating facility will comply with all applicable federal, state and local laws and regulations.

Q. WHAT TYPE OF FUEL WILL BE USED BY THE PLANT?

A. Natural gas will be the primary fuel for the plant with distillate (No. 2) fuel oil as a back-up. High pressure natural gas will be supplied to the site through a connection to interstate pipelines. The interstate pipelines will deliver natural gas from both the Gulf of Mexico region and from the liquified natural gas (LNG) facility near Savannah, Georgia. Distillate fuel will be delivered to the site from local terminals in truck tankers and stored on the plant site in above-ground storage tanks.

Q. WHAT ENVIRONMENTAL CONTROLS WILL BE INCLUDED IN THE PLANT?

A. The plant will use dry low NOx combustors when burning natural gas and water injection for NOx control when burning distillate oil. In addition the HRSGs will include selective catalytic reduction (SCR) systems for further reduction of NOx emissions. Low sulfur distillate oil will be used to minimize oxide of sulfur emissions when burning oil. A closed cycle cooling system with evaporative cooling towers will be used to transfer heat from the steam turbine condensers to the atmosphere.

Q. WHAT OTHER INFRASTRUCTURE IS REQUIRED TO SUPPORT THE PLANT?

A. The plant will require water primarily for make-up to cooling towers and the steam cycle. Water is also needed for fire protection and potable use. This water will be supplied by the Beaufort-Jasper Water and Sewer Authority from a

1 new water treating facility located adjacent to the plant. Water "blowdown" from
2 the cooling towers and steam cycle will be returned to the water treating facility
3 for recycling reducing the volume of wastewater generated. The small amount of
4 wastewater generated by the facility will be delivered to the Hardeville
5 wastewater collection and treatment system for processing.

6 The electrical output of the facility will be delivered to our customers
7 through the 230 kV transmission grid. In addition to interconnection with the
8 SCE&G system, the substation will have transmission lines connecting to the
9 Santee Cooper and Southern Company systems. Generation connection impact
10 studies have been performed including power flow analysis, short circuit analysis,
11 and stability analysis. These studies indicate that with appropriate system
12 improvements the transmission grid will support the interconnection of this
13 generation project.

14 Existing South Carolina roads and highways will provide vehicular access
15 to the site.

16 **Q. WHAT ARRANGEMENTS HAS SCE&G MADE FOR THE CONSTRUCTION OF**
17 **THE PROJECT?**

18 **A.** SCE&G is negotiating a fixed price contract for the engineering, procurement and
19 construction (EPC) of the project with Duke/Fluor Daniel. Similar contracts were
20 negotiated for our Urquhart Repowering Project, currently under construction,
21 and our completed Cope Station. Construction will begin in the spring of 2002
22 with commercial operation of the plant scheduled for May 1, 2004. The contract

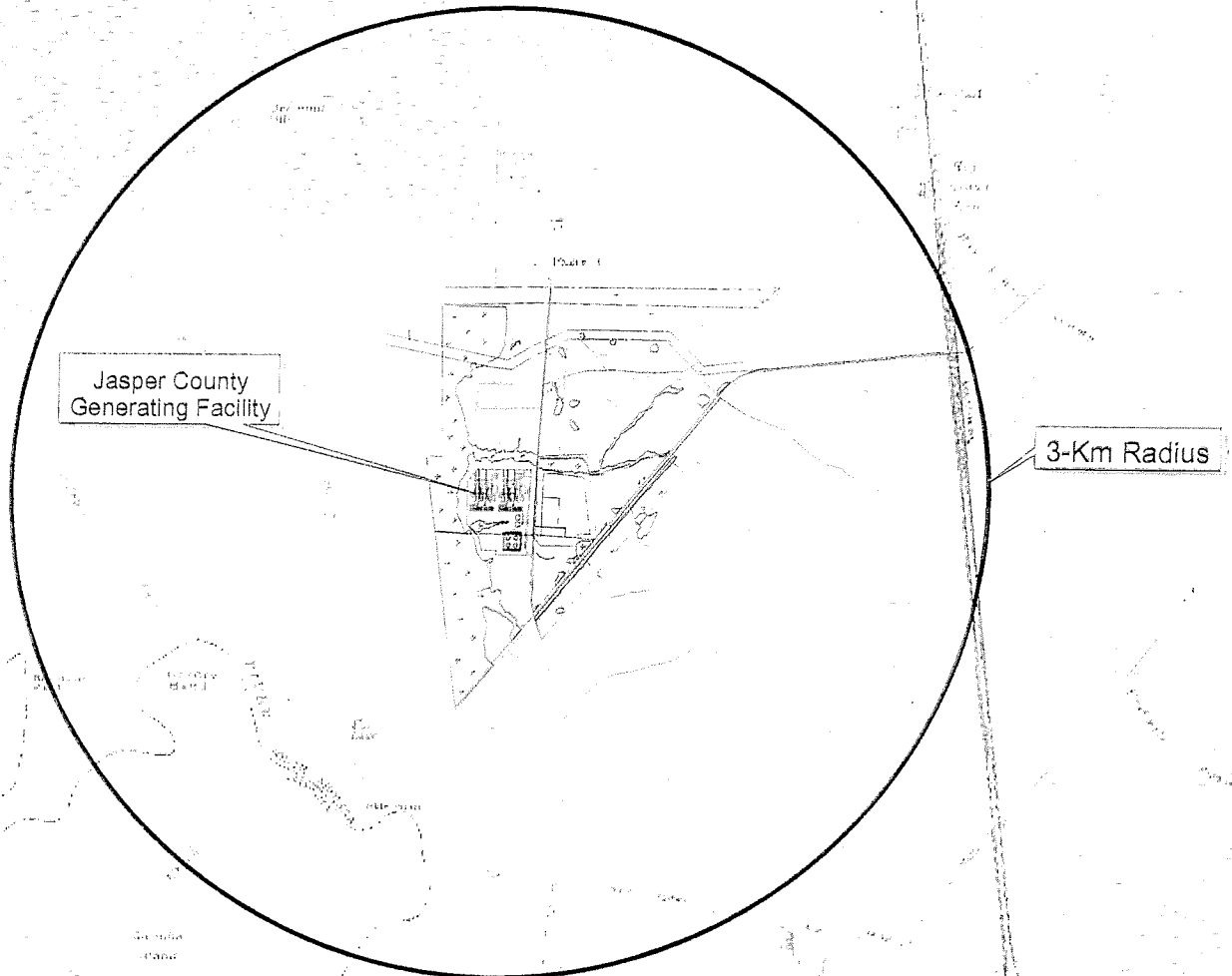
1 will include schedule and performance guarantees with associated liquidated
2 damages.

3 **Q. WHAT DOES SCE&G ESTIMATE THE TOTAL COST OF THE PROJECT TO**
4 **BE?**

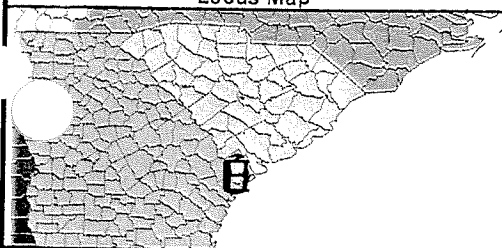
5 **A.** The total cost of the project including Allowance for Funds Used During
6 Construction (AFUDC) but excluding transmission system improvements will be
7 approximately \$450 million.

8 **Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

9 **A.** Yes.



Locus Map



USGS QUADRANGLES:
 Hardeeville, SC
 Rincon, SC
 Tillman, SC
 Hardeeville NW, SC

Jasper County Generating Facility

Figure 1-1 REGIONAL TOPOGRAPHIC MAP

0 2 Kilometers

Date:

June 2001

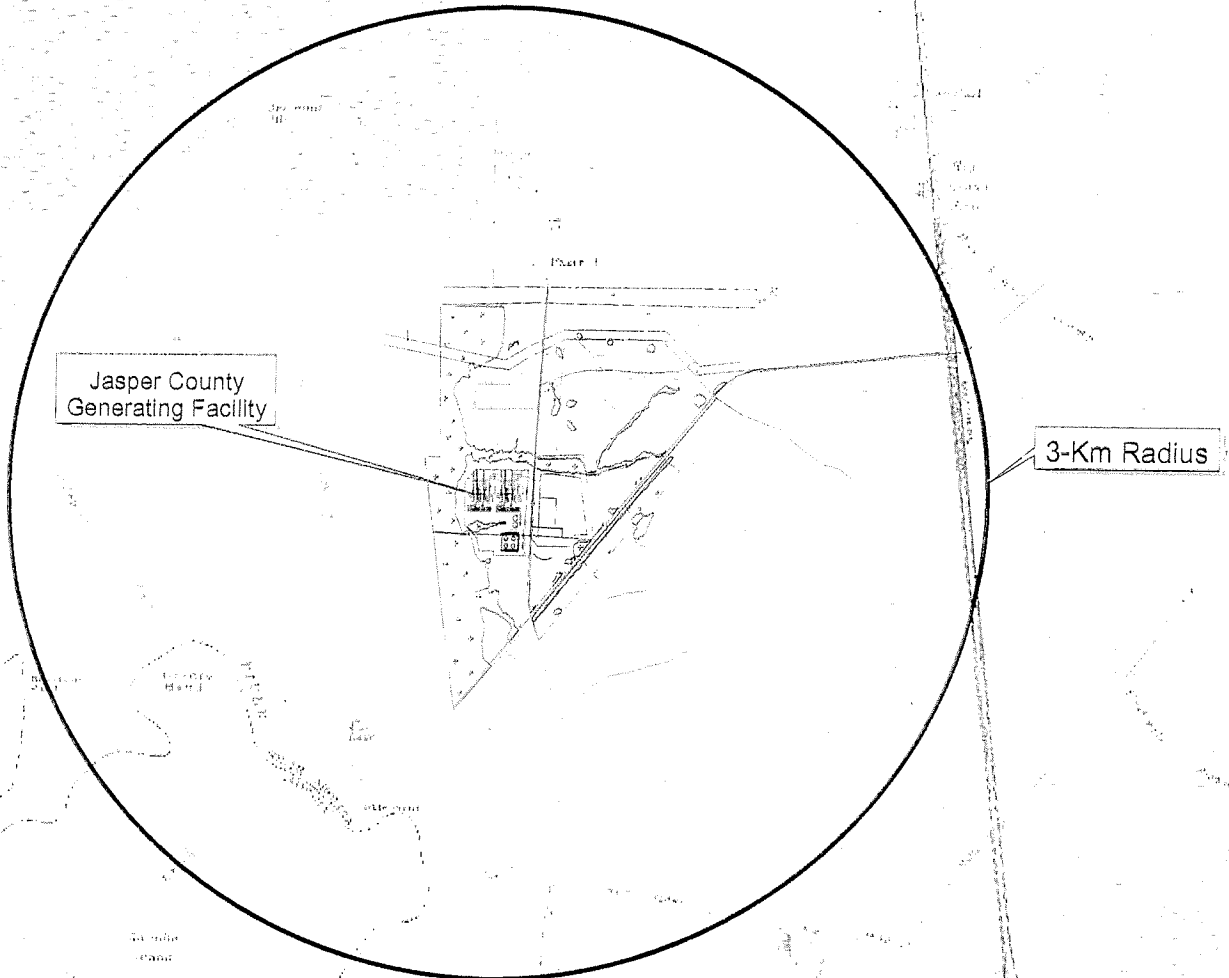
Drawn by:

TOP

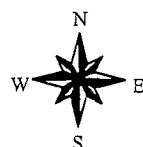
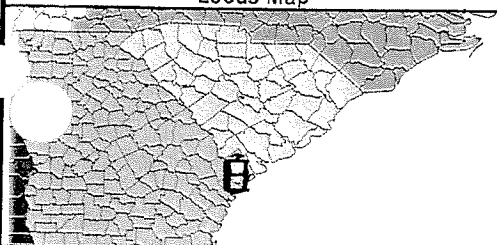
Project Number:

6147-018

ENSR
INTERNATIONAL



Locus Map



USGS QUADRANGLES:
Hardeeville, SC
Rincon, SC
Tillman, SC
Hardeeville NW, SC

Jasper County Generating Facility

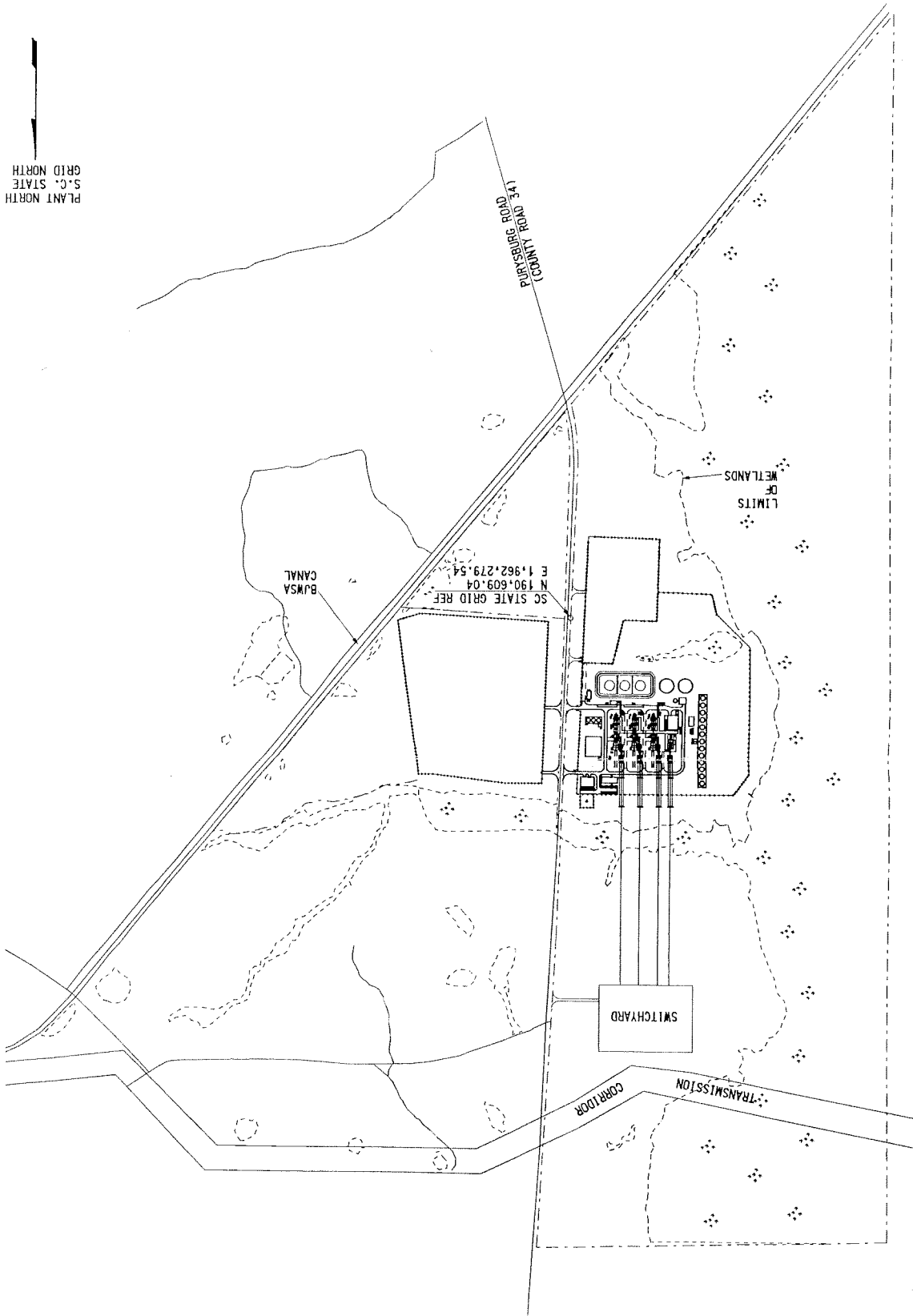
Figure 1-1 REGIONAL TOPOGRAPHIC MAP

0 2 Kilometers

Date: June 2001
Drawn by: TOP
Project Number: 6147-018

ENSR
INTERNATIONAL

PLANT NORTH &
GRID NORTH
S.C. STATE



JASPER POWER PROJECT
NEAR HARDEVILLE, S.C.

DIRECT TESTIMONY OF

JOHN W. PRESTON, JR.

ON BEHALF OF

SOUTH CAROLINA ELECTRIC & GAS COMPANY

DOCKET NO.

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is John W. Preston, Jr. and my business address is 6248 Bush River Road, Columbia, South Carolina.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am employed by SCANA Services, Inc. and am a Senior Engineer in the Corporate Environmental Services Department and serve as Section Head of the Generation Support Group.

Q. WOULD YOU PLEASE SUMMARIZE YOUR EDUCATIONAL BACKGROUND AND EXPERIENCE?

A. I graduated from the University of South Carolina with a Bachelor of Science degree in Chemical Engineering and a Master of Science degree in Engineering. I hold a Professional Engineer's license to practice engineering in South Carolina. I have worked in the environmental field for twenty-eight (28) years, twenty of those with SCE&G. I am a research advisor to the Electric Power Research Institute, the Chairman of the South Carolina Chamber of Commerce Environmental Technical Committee, the President of the Carolinas Air Pollution Control Association, a member of the Central Midlands Clean Cities Coalition Planning Committee, a member of the Department of Health & Environmental

1 Control (DHEC) Clean Air Partnership, and a member of DHEC's Small Business
2 Assistance Compliance Advisory Panel.

3 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

4 A. The purpose of my testimony is to discuss aspects of the Jasper County
5 Generating project, which relate to environmental matters. I will describe the
6 efforts to minimize the environmental impact of the project, the permitting
7 process, and the status of the acquisition of the required permits.

8 **Q. PLEASE DESCRIBE THE ENVIRONMENTAL MINIMIZATION**
9 **EFFORTS OF THE PROPOSED JASPER PROJECT.**

10 A. The first minimization effort is the use of natural gas as the primary fuel. The
11 sulfur and ash content of natural gas is negligible, thus, sulfur dioxide and
12 particulate emissions are at an absolute minimum. With the ash and sulfur
13 content being negligible, the need for large settling ponds or landfills to dispose of
14 the ash and scrubber sludge does not exist in this project. State of the art control
15 technology for nitrous oxide (NOx) emissions will be utilized at the Jasper
16 project. With the use of combustion controls and Selective Catalytic Reduction
17 equipment, the NOx emissions will be at an extremely low concentration of 3.5
18 parts per million (ppm). Combustion controls will also minimize the carbon
19 monoxide (CO) and volatile organic compound (VOC) emissions.

20 A complete application, including an air quality analysis, a secondary impacts
21 analysis, and a Class I Area impact review, have been submitted to DHEC's
22 Bureau of Air Quality. Review of this application will also be performed by the
23 United States Environmental Protection Agency and the Federal Land Manager of

1 the three Class I air quality areas within 200 kilometers (124 miles) of the Jasper
2 project.

3 A complete air quality analysis has been performed for the new combustion
4 turbines. Air quality impact determinations demonstrate that operation of this
5 facility in conjunction with other emission sources will be in full compliance with
6 the National Ambient Air Quality Standards (NAAQS). The air permit application
7 demonstrates that the proposed project will be in full compliance with applicable
8 state and federal air pollution control requirements based on #2 fuel oil firing.

9 A secondary impacts analysis and a Class I Area impact review were
10 conducted to evaluate potential impacts on soil, vegetation, visibility, and
11 potential associated economic growth. No areas of concern were identified.
12 Impacts to Class I Areas that exhibit pristine air quality are not anticipated from
13 this project, since the nearest Class I Areas are over 100 kilometers (62 miles)
14 from the Jasper project.

15 Water usage at the Jasper project will be such that no direct discharge of
16 process wastewater to waters of the United States will be necessary. No National
17 Pollutant Discharge Elimination System (NPDES) permit will be required, except
18 for a General NPDES permit for stormwater discharges during construction and
19 operation. SCE&G will purchase water from the Beaufort Jasper Water Authority
20 (BJWA). The project usage will be 8150 gallons per minute at peak flow rate and
21 5530 gallons per minute during normal usage. The major water usage will be for
22 cooling tower make-up. Water used for cooling will be recycled, evaporated, or
23 returned as blowdown to the BJWA. Sanitary wastes will be discharged to the

1 City of Hardeeville publicly owned treatment works (POTW). Other smaller
2 waste streams will be discharged to either the BJWA or Hardeeville POTW.
3 Temporary wells for water supply during construction will be necessary, however,
4 no groundwater withdrawals at the site will occur when operation of the facility
5 begins. All water supply needs will be provided by BJWA, including the
6 temporary wells during construction.

7 A wetland delineation has been performed at the Jasper site and all
8 construction and operation activities will avoid wetlands, thus, eliminating impact
9 to this ecosystem. The wetland delineation followed the United States Corp of
10 Engineers Wetland Delineation Manual, and based on this delineation, two
11 wetland systems were identified. These areas will be avoided.

12 An Endangered Species Assessment has been conducted, and according to the
13 field surveys, no state or federally listed threatened or endangered species were
14 observed within the project area.

15 An intensive cultural resource survey was conducted, and based on the results,
16 one previously unrecorded site and one isolated find were identified. These two
17 sites are not recommended as being eligible for the National Register of Historic
18 Places. The archaeologists have concluded that no further action is required with
19 regard to cultural resources.

20 **Q. IN YOUR OPINION, IS THE PROJECT'S IMPACT ON THE**
21 **ENVIRONMENT JUSTIFIED?**

22 A. Yes. Given our environmental minimization efforts, I believe the impact upon the
23 environment is justified.

1 **Q. DISCUSS BRIEFLY THE ENVIRONMENTAL PERMITTING PROCESS**
2 **AT THE JASPER SITE.**

3 A. In addition to the review process which is underway here before the Commission,
4 the Company must make application to and receive approval from other
5 regulatory agencies at the federal, state, and local levels. The construction and
6 operation of the facility and its environmental impact on all media (air, water, and
7 land) will be evaluated primarily by the South Carolina DHEC. An application
8 for a DHEC Bureau of Air Quality permit has been filed, and construction cannot
9 begin without the approval of the project through the issuance of the Air permit.

10 This permit application will also be reviewed by the United States Environmental
11 Protection Agency Region IV in Atlanta and by the Federal Land Managers
12 associated with the three Class I air quality areas within 200 kilometers of the
13 Jasper site.

14 The project will require construction permits for all on-site wastewater treatment
15 facilities (e.g. collection systems, pumps, sumps, etc.). Prior to performing any
16 construction on site, an approval for the Federal General Permit for stormwater
17 discharges associated with industrial activity must be obtained. SCDHEC
18 administers the General Permit program for these type discharges. In addition,
19 since Jasper County is a coastal county, there is a second stormwater permit that
20 has to be obtained to address activities during construction. In this permit there
21 are specific State requirements regarding properly managed stormwater flows and
22 sediment control practices that must be followed during construction.

23 Construction permit applications for wastewater treatment facilities and

1 applications for the stormwater permits will be submitted when design drawings
2 are available.

3 **Q. WHAT IS THE STATUS OF THE ACQUISITION OF EACH REQUIRED**
4 **PERMIT?**

5 A. The permit application for DHEC's Bureau of Air Quality permit was submitted
6 on August 7, 2001. The air permit is expected to be issued by May 2002.
7 The preliminary engineering report (PER) for the wastewater treatment facilities
8 will be submitted when design is complete and the stormwater permit
9 applications will be submitted in November 2001. Construction permits for the
10 wastewater treatment facilities are expected to be issued three months after the
11 application is submitted. The stormwater permits are expected to be issued in
12 February 2002.

13 **Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

14 A. Yes, it does.